Checkley's Natural Method of Physical Training

By Edwin Checkley

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EDWIN CHECKLEY

CHECKLEY'S
NATURAL METHOD
of
PHYSICAL TRAINING

MAKING MUSCLE AND REDUCING
FLESH WITHOUT DIETING
OR APPARATUS

BY EDWIN CHECKLEY

WITH NUMEROUS ILLUSTRATIONS
BY H. D. EGGLESTON

PHILADELPHIA, PA.
THE CHECKLEY BUREAU
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EDWIN CHECKLEY--AN APPRECIATION

NO MAN ever was a better exemplification of the value of his own teaching than Edwin Checkley.

Dying of an accident at the age of 75, the resident physician in the hospital that treated him, denied that he could possibly be that age. "His body is that of a vigorous man of fifty" was the verdict of this doctor. Not knowing Checkley's history and life-work he was unable to understand how a man nearing eighty could be possessed of such a wondrous physique and such terrific strength.

The writer had an interview with Mr. Checkley a few days before his death.

After suffering from a fatal dose of gas poisoning which had overcome even his wonderful lungs, his physique was as impressive as at any time in the last 30 years.

Particularly noticeable was his marvelous chest, which sprang forward from the base of the neck in a swelling curve. Checkley had the

highest arched chest I have ever seen in any human being. He ascribed this to his habit of what he termed "costal breathing"; that is breathing with the upper part of his lungs as contrasted to the usual abdominal breathing.

The picture facing the Title Page was taken when Checkley was 45 years old, and except for the graying hair it would have been a good picture of him at 75. Possibly he was a trifle more rounded; he may have accumulated 5 or 6 pounds more flesh; but there was no wasting of tissues, no bowing of the shoulders or bending of that flat back; his head was carried as proudly as ever on that round columnar neck, and his step was as springy and his bodily carriage as buoyant as at any time since he brought himself to his prime.

To me, the most interesting points of Checkley's physical equipment were his lungs and his back. I have seen him box, wrestle, run, jump for protracted periods. I have seen him lift and carry hundreds of pounds of live and dead weight, but never once have I seen him pant for breath. At his lectures, I have seen him demonstrate the capabilities of some muscle

groups by performing feats of strength beyond the power of most professional strong men, and a second later resume his talk without the slightest catch in his breath.

I fully believe that he could have made a fortune as a "strong man," but such work did not interest him. He abhorred heavy Dumb Bells and I never knew him to touch them but once; on that occasion he closed an argument with a teacher of heavy-lifting by raising weights that the dumb-bell devotee could not begin to handle, and this without any claim to special knowledge of the technique or tricks of the lifter's art.

Checkley's knowledge of anatomy was so comprehensive, his control over his muscles so great, and his ability to call a great number of muscles into simultaneous action so uncanny, that it was hardly fair to compare him with the ordinary athlete.

To illustrate: On pages 65 and 66 of this book, he speaks of the muscles which control the shoulder. He lays no especial emphasis on this part of his teachings, but with Checkley that does not mean that the rules he laid down are unimportant. He was apt, both in speech and

writing, to propound a revolutionary principle in the most casual way.

I recall one lecture (at the Franklin Institute in Philadelphia) when he devoted an unusual amount of time to these muscles which control the shoulders. To show their great power when properly developed, he gave two practical demonstrations. *First*: Lying flat on his back he allowed a 200-pound man to stand on each of his shoulders; then, while keeping his head and spine in contact with the floor, he shrugged his shoulders forward, raising both men several inches in the air. *Second*: having shown that the muscles which move the shoulders forward were capable of moving against 400 pounds resistance, he then gave a most interesting proof of the equal power of the muscles which spread the shoulders apart.

Across the back of his neck he held a short chain capable of sustaining 500 pounds. Turning his back to the audience, he showed how the average athlete would attempt to break the chain by tugging violently on each end of the chain, but using only the strength of his arms. He confessed that he was unable to break the chain

in this way, but called upon us to notice the difference when he used the upper-back muscles which control the shoulders. He squeezed his shoulder blades together (that is toward the spine) and took a firm grip on each end of the chain; then without disturbing the position of his arms, he slowly spread his shoulders and the chain parted.

An examination of Checkley's picture shows that his arms were not abnormally large but that his shoulder muscles were much larger than those of the average athlete.

His back was flat, his chest round as a barrel, his hips broad and his legs very sturdy. Only once in the whole book does Checkley allude to his own strength and that is when he says "I can lift three men each weighing 150 pounds and trot with them for a hundred yards."

Such a feat was not as difficult to him as running a block unencumbered would be to most men of his age.

He had little toleration for strength feats as such, and he only performed such feats as proof of the capabilities of the well developed body. He was, however, intensely interested in the

mechanics of muscular movement and the advantages to be obtained by certain leverages.

His views on muscular development were different from those of most physical culturists. Few men have had his ability to build up the external muscles, but he claimed that such development was harmful unless the vital organs were correspondingly vigorous.

Overtaxing the heart, lungs, kidneys or other organs was to be avoided, "for," he said, "power comes from within, and you must be careful not to overload your motor."

At the age of 70 he remarked that he could still outdo and outlast any man he had so far met because he had never forced himself to his limit, nor attempted anything beyond his strength. "If I attempted a feat and it seemed to require an inordinate exertion, I stopped, and never allowed my pride or vanity to lead me into excess; these fellows who tug and strain until their eyes pop out, will pay for it later."

He firmly believed that everyone ought to be strong, but that muscular strength was secondary to vital strength, and that the only really lasting muscular strength came from *inward health.*

He insisted on flexibility, and by that he meant not only suppleness of muscles but also flexibility of the rib-box, and an easy working of all the joints.

He claimed that at seventy he had all the vital and muscular vigor that he possessed at seventeen. Certainly he could stoop, bend and twist himself with as little effort as a small boy displays in tumbling around.

After developing himself according to his own ideas, he started teaching at about the age of 35. His success was immediate. The first edition of this book brought forth a chorus of praise from the medical fraternity and press. Since that time many of his ideas have been adopted by a number of other Physical Culture teachers.

As in the case of all great pioneers and teachers, few of his imitators (or disciples) have equaled him in ability. You could imitate Checkley, you could copy him, but you could not originate as he could, unless you had his knowledge of anatomy and physiology, together with his creative originality.

Julian Hawthorn, writing of exercise, quoted

Checkley as saying that one must exercise all the time, which was merely Checkley's way of saying, that, given proper knowledge, every movement made during the day could be converted into an upbuilding exercise rather than an exhausting labor.

Necessarily he had to perform a certain number of movements while instructing his pupils; outside of that he *never* took exercise, depending entirely on his method of standing and walking, and the ordinary exertions of the day to keep him in his perfect state of health and vigor.

"If you stand and move properly, which means that you use your muscles properly, you keep your internal machinery oiled."

Imagine, if you can, a physical instructor who never invited one to feel his muscles, and who considered that the rebuilding of a single pupil was far more important than his own phenomenal feats of strength, and, who, furthermore, valued his own wonderful physical prowess and well-being principally as a proof of the correctness of his theories.

Elbert Hubbard, writing of Macaulay, said, "Carry the crown of your head high and men

will believe in you." He could have said this with equal truth of Edwin Checkley. His spirit and example were contagious. One of his pupils told me, that many a time after he had had a hard worrisome day at the desk, he would walk home with Checkley—"I tell you," said this man, "Checkley was the most inspiring human being I have ever known. No matter how tired and fagged out I was, after a few blocks stepping alongside of Checkley he had me feeling as though I was walking on air. If you followed his example you could not help feeling rejuvenated."

I know several of Checkley's pupils who credit him with having saved their lives; but the best tribute paid to Checkley's ability was by an elderly gentleman who said:

"I heard Checkley lecture once, and I was so convinced by his argument regarding breathing, that never since that time have I gone a day without practicing his methods of breathing. It took me some time before I mastered his 'costal breathing,' but in the 25 years since then, I have enjoyed the best of health, and old as I am, I can walk for miles without fatigue, and

can skip up three flights of stairs with the best of them. I think that as a general rule, there is no crank like a physical culture crank, but Checkley was different. Probably I liked him because he proved to me that I could attain vigorous health without the laborious calisthenics that I so despise."

Checkley was fifty years ahead of his time. Since the publication of the first edition of this book, there have been breathing systems, systems which specialize on the spine, and "no apparatus" systems, most of which are an outgrowth of this man's work.

Checkley had the artistic temperament. He cared intensely for the technical side of his profession but little for the business side. He treated all cases individually, instead of in classes, and a great deal of his time was occupied in handling curative cases for physicians of his acquaintance.

Checkley was a great reader. He literally devoured every book he could obtain that dealt with anatomy and hygiene. He was the intimate friend of many physicians and his great pleasure was to engage in arguments and discussions with these doctors. No professional man ever went

further than Checkley, in keeping abreast with the best thought in his chosen profession.

After his death a number of manuscripts were found which have been incorporated in this volume in Chapters XIII-XIV. That these chapters are somewhat disjointed is accounted for by the fact that the manuscripts were written at different dates.

A Grateful Pupil.

NOTE TO THE REVISED EDITION.

THE immediate success of "A NATURAL METHOD OF PHYSICAL TRAINING" has more than one explanation, but it is doubtless true that the chief cause of the book's popularity has been its effort to present a "natural" method of giving vigor to the body without calling in the artificial aids of apparatus or harsh systems of dieting. Every system of training—the word is used here and elsewhere in the book in its broader meaning and not to signify athletics—that is dependent upon apparatus is necessarily a spasmodic training. Men and women cannot carry such training about with them. If they travel, or are greatly occupied in something that keeps them away from the gymnastic machinery, their training is suspended. The system set forth in this book has attempted to show that the only direct method of keeping the body vigorous is by correcting artificial restraint, carrying the body correctly, breathing correctly, and otherwise following a logical system of giving the muscles and organs free and natural play, and opportunity to develop symmetry and strength.

The author has had every reason to be gratified at the indorsements which have been offered by those who have devoted themselves to the science of athletic train-

ing, the more as his system radically attacks the older system of college and gymnasium athletics. The author's argument, for instance, that hard muscles are a danger and not an advantage, has begun to receive support from practical and distinguished exponents of the science of muscular development.

The author has been especially gratified at the cordiality of the medical press and profession, which have been all but unanimous in praise of his system as outlined in the present treatise. Here again the indorsement is peculiarily welcome, from the fact that the book might be considered to take an attitude of radical independence toward the medical profession. The truth is that the anthor has urged his theories in no disrespect to healing science, and is proud to have received such substantial support from physicians of every school.

A writer may consider himself fortunate when, in a revised and extended edition, he finds himself under no necessity for material modification in any of his chapters. In extending this book the writer has aimed to make some points more clear, and to enlarge in a general way the usefulness of the volume.

PREFACE.

PHYSICAL training is "in the air," but the observer of current events is able to discover in reports from the athletic world that there is something wrong about most modern methods of training. Muscle-molding schemes that make men die in middle life may be pictorially interesting and may sound heroic, but they are not for that wise average mortal who wishes simply to feel light and strong and, if need be, find himself ready to safely enter on any reasonable physical undertaking. The author of this book believes that there is more "straining" than "training" in a good many popular systems practiced in and out of the college gymnasium, and the method he himself advocates perhaps radically departs from familiar systems. Yet this method seems to the author so fully indorsed by nature and by results that he might, if not for the appearance of egotism, have called this book "*The* Natural

Method of Physical Training," instead of using the indefinite "*A*." In the pages that follow an effort has been made to outline a plan of conduct for bodily development that is not dependent on any appliances whatever, that will build up the frame of the slender and reduce the unwelcome proportions of the corpulent without the employment of machinery or harsh and weakening methods of dieting.

The author fears that he may not always have been able to connect in each chapter all that he had to say upon each point covered, and thus feels that those who wish to follow the system from these pages should carefully read the whole book, observing the emphasis upon seemingly minor matters. **E. C.**

CONTENTS

		PAGE
I.	The Bugbear of Training	7
II.	How to Carry the Body	17
III.	How to Breathe	31
IV.	Muscles and What They Do	45
V.	The Joints and Their Development	57
VI.	Exercises for Muscles and Joints	71
VII.	The Treatment of Obesity	85
VIII.	Training for Women	101
IX.	A Word About Children	113
X.	Some General Hints	123

APPENDIX

XI.	A Word About the Spine	155
XII.	More About Breathing	167
XIII.	Force of Habit	175
XIV.	On Retaining Youth	197

The Checkley System.

I.

THE BUGBEAR OF TRAINING.

THERE are two points which writers and talkers about physical training are almost always ready to bring forward when discussion arises as to the present status of our race—they tell us to look at the ancient Greeks and at the animal kingdom. They tell us the ancient Greeks attained certain proficiencies in the field of athletics, and developed a remarkably perfect physique, which the artists delighted to reproduce. They show us the muscular perfection of brute creatures, their general health and comfortable relations with life.

These points are in the main well raised. The example of the Greeks was in all respects one toward which the attention of modern peo-

ples may always profitably be turned. The Panhellenic games were an inspiration to the rising generation. They made physical vigor fashionable. And they were not merely an isolated incident in the life of the Greeks. These Panhellenic games were simply the flowering of a superb system of training—superb so far as it related to the work to be done in those tremendous conflicts of the arena. Physicians and law makers alike realized the importance of athletic exercise. Lycurgus scattered free training schools, and his successors followed up, in one way or another, the example set by this remarkable governor. The people paid extraordinary honor to the athletic heroes. A man who won more than one prize at the same Olympiad was modeled in marble by the best sculptor of his state. We are reminded of our own times in the accounts which tell of the large fortunes made by those who achieved some especial glory at the games.

But the conditions of life among the ancient Greeks were wholly different from the conditions of life with which modern men and women

are struggling. The athleticism of the old Grecian race was cultivated under very favorable circumstances. The Grecians not only led a more outdoor life than our northern races, but their mode of living, in respect to public and private festivals, entertaiments and social movements, made the development of the physical man much easier than it can ever be with us. These differences do not make it less proper for us to look to the Greeks, but we should remember the necessities arising out of these differences. It is for us to study out the compromise which must be made. Properly made, this compromise will represent a new and sufficient ideal.

It will pay to remember that there has been a good deal of exaggeration in stories of Greek prowess. Undoubtedly we are in possession of some fairly accurate figures concerning the feats of the old athletes, but there are many absurdly false estimates of the early running, jumping and throwing. The Panhellenic games brought forward men who had been in training for great periods for special feats. The honors awarded were so great that no amount of train-

ing and exertion were considered too considerable. Given the same training our modern athletes would greatly surpass the Greek records. If the modern horse is quicker than the ancient, the modern man is quicker also. Our all-round athletes would, I am sure, have astonished an audience at an Olmypiad. And as for the matter of physique, there has been equally great exaggeration on that side. Plato tells us that the sculptors took considerable liberty in departing from the actual form of the model. Everything points to a relative inferiority in the ancient races; yes, even in the worshiped Greeks. No one should doubt that the world is producing men of finer form than it has hitherto produced, and that it will continue to do so.

If we consider the other allusion to the brute creation we shall find many things to rebuke and instruct us, but many things also that indicate the possibility of exaggerating the relative physical superiority of the beasts. Man is physically the most magnificent of all animals. His muscular system excels in versatility that of any other creature. He can stand

variations in temperature, in forms of covering, in kinds of occupation that are impossible to the lower animals. Considering the things he is in the habit of eating, and the other trials he places upon his system, we can only marvel at the splendid manner in which he is proving his physical superiority to all his other neighbors on this planet.

The significant thing in connection with brute creatures is that they do not have athletics. The lion keeps his marvelous strength without extraordinary effort. And so with other beasts. Their natural habits keep them in condition, and sometimes their natural habits do not seem to fully explain why they are so strong and so healthy. As a matter of fact, beasts are not, of course, always so strong as they would be under training, but by not training they escape other difficulties, of which I will speak a little later on. If we are to take any special lesson from the lower animals, it must be that the best strength is that produced under natural habits.

This brings me to that bugbear of "training." To a certain number of people athletic

or special physical training is agreeable. In fact, few who enter it find any kind of training without some exhilaration. But the proportion of people who do any training at all is very small, while the number who might, if the proposed training did not come in the guise of hardship, is unquestionably considerable. The course of exercises prescribed to many an ambitious victim of physical weakness is altogether too heroic, and even those who are fairly strong, and who would like to develop and maintain their strength, are frightened off by the systems put forward as necessary. Elaborate apparatus is one of the symptoms of an elaborate system. The little fellow who went a-fishing was certain he could catch bigger fish the further he went away from home, and the designers of health lifts and chest expanders, boxing machines and rowing appliances seem to feel that the glitter and elaboration of their machinery will tempt and benefit the purchaser in proportion to their size—and complexity.

It is undoubtedly a fact that certain artistic formulas for training have a fascination at the outset. Their ingenuity seems to promise an

opening of the mysterious road to health. The novelty itself is something to count upon. And machinery has a certain charm while it is new. You pull this and push that so many times a day and you get to be a little amateur Samson. You already feel the muscles expanding. Those biceps especially draw attention, as if they were the synonym of health and strength. But the mystery vanishes after a while and something or other is always interfering with that half hour at the machine. It is put off for a day, for two days, for a week. Interest gradually evaporates and the biceps are allowed to go to the bad again. The illusion disappears and is gone.

And then the corpulent subject is attacked with that terrible legend—"Diet." Leave off eating so and so, is the order, and your paunch will gradually and beautifully disappear. The so and so, of course, is always exactly what the corpulent subject most enjoys. But the worst of it all is that, in spite of obedience, after a terrible struggle, to the awful ordeal, after the discomfort and weakness of implicit reliance on a certain system of eating, there is only a loss

of a few pounds out of many and no material change in the general form or condition. At the first halt in the rigid dietary discipline there is complete relapse in flesh.

These ordeals bring "training" into very bad repute. Sometimes they do actual injury. The youth who enters the gymnasium at college, starts out on a career of violent training—general as well as special—finds himself exhilarated for a time. His special strength increases, but his false start on the great material lines tells against him in after years, when a little weakness around the heart and a sudden lightness in the head tell a story of bad beginnings and false discipline.

There is something radically wrong in these harsh and extravagant methods of training. The average man does not care to be an athlete in the accepted sense. If he has means to squander in appliances he does not have the opportunity to use them as directed, and the most slavish adherence to the rules somehow does not have the expected effect. The lifting and striking power may be gradually increased and the chest expansion slightly improved, so

far as measurement goes, but there is something wanting. Anything that interferes with the galley-slave labor at the apparatus sets back work. The strength of the man so "trained" has no reliance on itself. It is superficial—only skin deep, as it were. The training will not "stay put."

The truth is that there can be no proper training that does not educate the whole system of the man. The muscular system of a man is not made up of chest and biceps. It is a wonderful and complex organization in which one part is intimately related with the other, and if the system as a whole is not kept in mind the building up of the arms will not increase the permanent strength or permanent health. Men become proficient at punching a sand bag who do not know how to simply carry their own body. They have spent their time in training, as it were, from the outside. One of our modern philosophers has said that we invent fine railroads, but we are forgetting how to walk. This is very true. We are forgetting how to stand, and, above all—fatal error!—we are forgetting how to breathe.

There are what are known as "conversational methods" of learning languages. I suppose these are very good methods. They are supposed to lead the student into a language without first learning the grammatical rules. In athletic training of the simplest kind there can be no profitable way of skulking around the first principles. We must breathe properly or forfeit all chance of ever becoming really strong, of having the kind of strength that wears well. We must stand properly if we wish to give the body and its muscles a chance to become what we wish them to become and what they must become to be at their best. The kind of training that starts in to load certain parts of the body with hard muscles, overlooking the simple elements of general strength, is an error that sometimes proves more than a harmless mistake.

In the chapters which follow I shall try, without elaboration, to outline the general principles of the muscular machinery and my system of developing that machinery into comfortable and healthful perfection.

II.

HOW TO CARRY THE BODY.

DOES it, then, need to be told how the body must be carried? Most certainly. It might be asked, Does a person not naturally carry his body as comfortably as he can? And the answer is that a person very seldom does. It may appear that this is being done, but the fact is not so. Some people naturally develop a habit of proper carriage, but they form a decided minority. Without guidance the chances are that a child will grow up into bad habits of holding himself together. His spine will be left to do things it was never intended to do. He will sit, stand and walk without proper reliance on muscles that were intended to make all his movements easier. He will collapse while sitting, rest on his heels, perhaps, while standing, and breathe so perversely that any unusual

exertion reveals the fact that only a limited series of muscles are brought into play, while the lungs are but half developed.

It is of the utmost importance, then, at the very outset that a person should do those things properly which occupy so large a percentage of the habits of his life. If there is a reflex action from correct habits of sitting, standing and breathing, to say nothing of other actions, it is quite clear that the formation of a correct habit will bring a certain percentage of added strength and health with no conscious exertion. It is like having money out at interest. The income does not seem to be worked for.

In fact, it is stating a simple truth to say that a man or woman should get good health and sufficient strength and perfection of form in the ordinary activities of life, if those activities, however meagre, are carried on in obedience to right laws. This truth is one of far-reaching yet unsuspected importance. There is a prevailing impression that this, that and the other mode of life prevent the development of a strong body, a superstition that one can-

not be strong without athletics, and violent athletics at that. Men carelessly retard and injure their physical system during, say, fourteen and a half of their waking hours, and then hope to counteract all this by fifteen minutes' work on a few muscles of their body, and generally not on the muscles that are most injured by the carelessness of the day.

It is a fact not very often taken into account that *clothes*, in their modern form, have a serious tendency to interfere with the right development of the body, to hinder muscular action and to generally hamper the physical system. I do not speak now of such special features as the corset, but of clothing in general. Unless the tendency is specifically checked, most wearers of fashionable attire will find themselves yielding to the tailor's or dressmaker's measurements. The stiff high collar worn by so many men rather helps the general poise of the head but is a dangerous obstacle to the healthy development of the neck muscles. The shoulders are, perhaps, particularly influenced by modern clothes. A man with low, sloping shoulders holds himself in a position to keep his sus-

penders from slipping, and accommodates himself to the habit of his coat. Then the conventional "cut" of trousers interferes with easy sitting, walking and stooping. Men sit so as not to "bag" or wrinkle their trousers, just as women, during the reign of the bustle, sat in a lop-sided fashion to accommodate the mysterious and ugly appendage. In many other ways people of both sexes, and scarcely oftener in one sex than in the other, are allowing their physical stature and habits to be strongly influenced by clothes.

Instead of so doing it is a duty to carry the body correctly, to move and act in every particular with reference to the health and beauty of the body without thinking of its covering. If the covering interferes either ignore the interference or select the covering differently. Let the clothes fit and protect the body, and not allow the body to seek the favor of the clothes. I have said nothing of shoes, whose wretched form so often weakens the body by discouraging exercise and by impairing the circulation. Small and ill-fitting shoes have done as much damage in the world as corsets.

They have made cheerful people peevish and strong people indolent, if not weak. Have shoes large enough to give your feet abundant freedom.

To get out of the ordinary activities of life all possible strength and health let us first learn to *stand*. A literal drawing of the actual standing position of twelve persons chosen at random would present a curious spectacle. The distended abdomen and more or less flattened chest would prevail in a majority of the dozen. It would be safe to say that in eleven out of the twelve the bone structure of the body and not the muscles would be found doing most of the work of keeping the body upright. The incorrect position, more or less characteristic of a great many people, and not by any means representing an extreme case, is shown in the accompanying illustration. The abdomen is here pushed forward into disagreeable prominence, or rather the body is allowed to settle on the legs as it may, thus rounding the shoulders and protruding the abdominal region.

This attitude is just as common among women as among men, and perhaps more com-

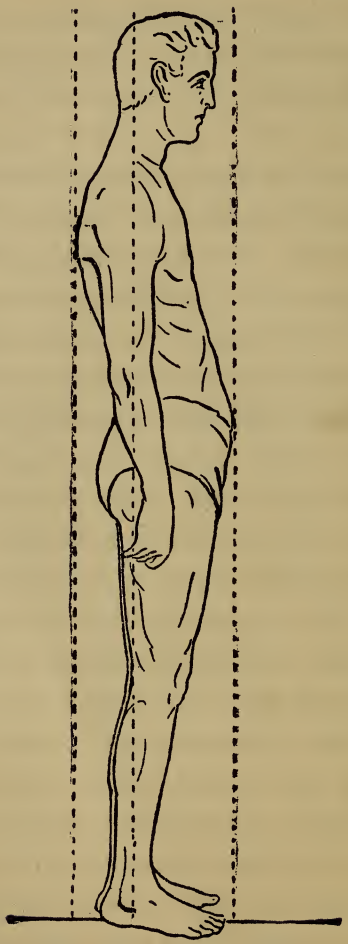


FIG. 1.

Incorrect standing position, very commonly observed among both men and women.

mon. For one thing, corsets, while theoretically holding the body up, encourage lassitude of the waist region. And then women are liable to affect a "willowy" style of standing and moving. Many girls seem to think that there is a kind of feminine charm in a lackadaisical manner.

Now the fact is that the bone structure of the body should not be forced to perform the work thus thrust upon it. The muscles should hold the body in position. Upon them devolves the task of holding the trunk erect, of keeping the proper relation between the spine and the pelvis (the bone structure from which the backbone springs) and the upper leg bones where they join the pelvis, forming what is called the hip joint. It is worth remembering that the height of a man may be materially affected by the manner in which he carries his body. If he uses the muscles of the hip and abdominal region and of the back instead of allowing his trunk to settle down, he may be certain of establishing a better height than if he did otherwise, and this height will be permanent.

The spine may be relied upon to give a certain support to the trunk. This may go without stating, but the multitude of muscles associated with the spine are intended to perform the greater part of the work in keeping the body in position. As the rudder guides a boat or reins lead a horse, so the muscles direct the posture of the body. They not only direct but largely support the body, and this should be remembered in standing and in every other position and action.

The correct position in standing is sometimes curiously exaggerated by the protrusion of the chest to a grotesque and unnatural degree. Figure 2 may be taken as an example of the position sometimes seriously recommended. There is no naturalness, force or beauty in such a position. The author's views of the correct position are indicated by Fig. 3. As will be seen by this illustration, the lips, chin, chest and toes should come upon one line, with the feet turned at an angle of sixty degrees. In such a position the body acquires its greatest ease, its greatest endurance and its greatest readiness. The chest, the wall covering the great boilers

FIG. 2.

Exaggerated standing position, distorting spine and chest.

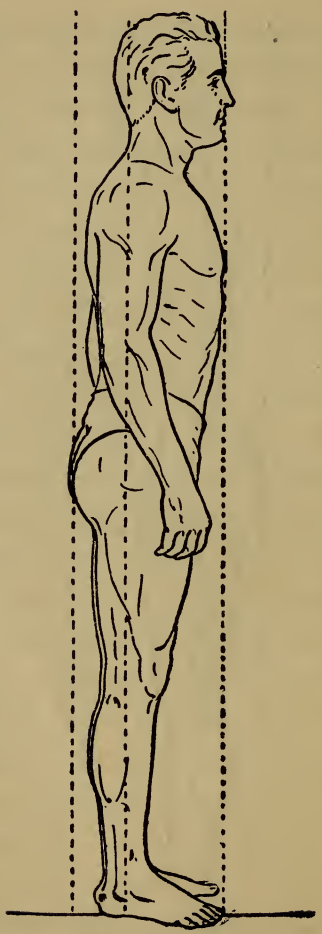


FIG. 3.

Correct standing position, showing natural and forcible carriage of the body.

of the body—the lungs—is given the greatest prominence, while the abdomen is carried more modestly than most people are inclined to carry it. The shoulder, hip and ankle joints are also kept upon one line. The neck is carried erect so as to bring the collar-bone into a horizontal position. Notice the difference in the carriage of the head between Figures 1 and 3.

The point of what I have urged is this: The muscles must be used in the support of the body—and all of the muscles that rightfully should. This does not imply greater labor, but less. What begins by a conscious effort will soon end in a habit—will become an exhilaration. What often passes for fatigue of the muscles is simply irritation arising from impeded circulation of the blood brought about not by the use but the cramping or non-use of muscles.

This numbness or irritation from impeded circulation is particularly liable to result from bad habits in sitting. In sitting, as in standing, the muscles must be brought into play, and precisely in proportion to the extent in which they are used will be the absence of fatigue in sitting. It is not to be maintained,

of course, that a person should continually sit bolt upright. This would, for a person compelled to sit during a great many hours each day, entail great fatigue. Some of the muscles may be relaxed and the position modified for short periods, but the muscles should never be so relaxed as to drop the trunk upon the spine, leaving its own bone structure to hold it up. Those who have dropped into this round-backed position will testify to a peculiar weariness in the lumbar region of the spine, what is called the "small of the back." To rise or sit upright and stretch the arms and body affords a great relief. This is not because the muscles have been tired, but because they have been benumbed by failure in the circulation. A proper maintenance of muscular action will keep up the healthy circulation and make it easier to sit for a considerable time without fatigue.

The cultivation of the muscles in the region of the abdomen and the lower part of the back will naturally have the effect of making it easier to sit, as every gain in the strength and extent of a system of muscles builds up a power

of involuntary action. In relaxing the trunk the well-drilled army of muscles will be found to have acquired a power to hold the body up with little perceptible effort.

In walking, keep face and chest well over the advanced foot, and preserve the habit of lifting the body with the muscles and by the inflation of the lungs. Of this I shall speak further in connection with the subject of breathing. Avoid a mincing step. Take a free, firm and easy stride, avoiding any hard jarring motions, keeping in mind during every movement or exertion the function of the muscles to support and move the body.

I say "keeping in mind" because I believe that the mind should not be above co-operation with the body. In fact, unless it does co-operate with the body the body cannot be strong and healthy, and if the body is not strong and healthy what can the mind expect to be? In recent years it has become something of a habit with a good many well-meaning people to say high sounding things about the superiority of the mind over the body, the essential insignificance of the body, etc. Is it not time

to emphasize the influence of the body upon the mind? Are we not constantly confronted by instances of the mind's dependence upon the body?

What I would like to emphasize is that the mind and body are dependent upon each other. The mind cannot get out of the partnership, however much it may wish to do so. It must stay, and it must do its share or suffer, and generally suffer keenly. The further our civilization advances the more complete this interdependence becomes. Under our fashion of living the body seems to require greater and greater attention from the mind, and the increasing mental strain assumed under our restless, hurrying life makes a greater and greater demand upon the vitality of the body. It is quite clear, then, that we are not in a position to talk about breaking the partnership.

Of course this conscious use of the muscles will not continue to be as great as at the outset. In time the proper management of the body becomes largely unconscious and involuntary, but need never become wholly so.

III.

HOW TO BREATHE.

AT the time of this writing the newspapers contain comments on the illness and death of certain prominent athletes. The winner of many prizes passes away at the age of twenty-four. Lung weakness seizes upon other seemingly stalwart types of "trained" men. These are startling facts. They form a significant comment on some modern methods of drilling the machinery of the human body. If men are to gain muscle at the expense of their life, it is plain that people will soon begin to look askance at training methods of every kind. What is the difficulty? Why has training become dangerous? Why do lung and heart troubles assail in after years the enthusiastic followers of highly active sport?

The answer seems to me to be this: That

modern "training" has become a "straining" system that is frequently not only indiscreet but dangerous. It is dangerous not only because of its useless violence and hardship, but because of the pernicious theories upon which it is founded. It begins on the outside instead of the inside. Greater than all its other evils is its neglect of the lungs.

When we stop for a moment to consider the tremendous importance of the lungs it must become apparent that any neglect of these great central boilers of the body is the worst kind of neglect. The office of the lungs is of the very highest importance. This importance is incidentally acknowledged by many writers and teachers, but the development of the lungs is left to take care of itself, it being assumed as a general thing that all exercises tend sufficiently to expand the lungs. To be sure, great stress is occasionally laid upon the expansion of the chest, but the assumption too frequently appears to be that this expansion is a matter of external muscular development. The theory is on a par with the general superficiality of the average system of training. The strength of

special parts in a steam engine, and even of bands on the boiler, will not prevent weakness and possibly an explosion if the material of the boiler itself is without strength. Hard layers of muscles on the chest do not improve the permanent strength of the lungs.

It should be clear that the enlarging and strengthening of the lungs can be satisfactorily accomplished only by the exercise and special training of those organs themselves—in other words, beginning on the inside. This truth lies at the very bottom of natural physical training.

To learn to breathe is to learn the A B C of physical health, and it is of special importance that this education of the lungs should precede the education of the outer muscular system, for the natural increase of lung strength and chest room is retarded by methods that begin work on the outside first.

What I have to say on this point will become clearer by consultation of Fig. 4, which shows the manner in which the rib system incloses the chest. It will be seen that there is a joint in the ribs as they approach the centre of the

chest. From this joint forward to the central strip of bone substance, called the *sternum*, the ribs are made of a flexible cartilage that is readily developed under exercise. Breathing distends the ribs and cartilage in the most effective way; indeed, in the only effectual way. To distend the chest by hollowing the back and throwing back the shoulders is merely a makeshift, while breathing creates a genuine tendency to expansion. The dotted line will indicate the manner in which the rib-structure distends under the interior pressure from the full lungs.

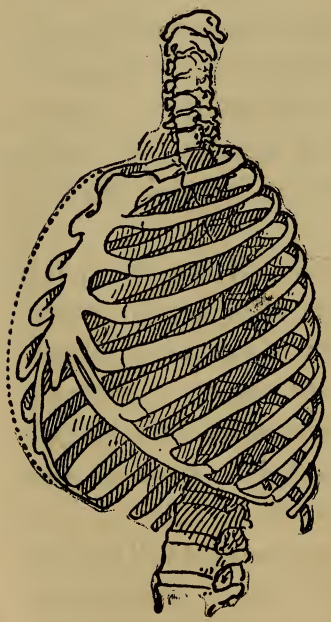
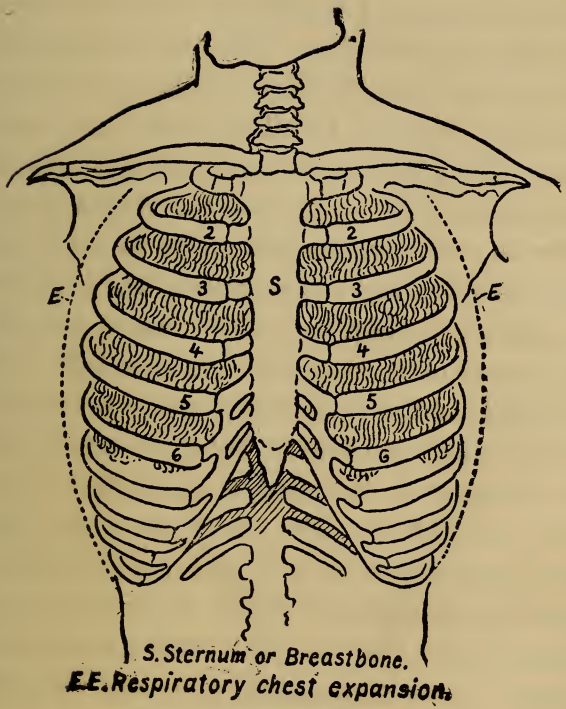


FIG 4.

Showing area of flexible cartilages. Dotted line shows proper direction of expansion.

The general position occupied by the lungs is shown very well in Fig. 5, where they are represented by the shaded parts.



S. Sternum or Breastbone.
E.E. Respiratory chest expansion.

FIG. 5.

The dotted lines on each side again illustrate the chest expansion under full breathing.

It will be noted in Fig. 5 that the lungs do not extend downward beyond the space between the fifth and sixth ribs. This may suggest the reason why the abdomen should not play so prominent a part in breathing as it so generally does. The diaphragm muscle, which separates the region of the lungs from the region of the stomach and liver, has the power to assist the lungs in receiving and expelling the air. But its power has been so greatly abused that the lungs and chest muscles have been left to do very little of the work that properly belongs to them. The unfortunate habit of abdominal breathing, as it is called, is particularly common among men. The use of the corset, and other reasons, have produced among women a habit of breathing with the upper part of the lungs, a habit that has been to that extent fortunate. Lung diseases are less frequent among women than among men. Women breathe less air than men, but they breathe it in a better way. Men generally exercise the lower parts of the lungs nearest the assisting

diaphragm, leaving the upper parts, that first receive the air, in a state of relative weakness and susceptibility.

In my opinion the diaphragm has properly no greater necessary use in expanding and contracting the lungs than the ribs themselves. In other words, the action of the diaphragm should be sympathetic without being initiatory. The lungs have their own muscular power, and this power should be fully exercised.

The simplest preparatory exercise is full, long breathing. While standing or sitting in any proper attitude, with the chest free, take in a long breath until the lungs seem full, taking care at the same time not to harshly strain the lungs or muscles. Hold the breath thus taken for a few seconds, and then allow it to slowly leave the lungs. By consciously breathing in this manner the lungs will be enlarged and strengthened and the breathing will become slower. Normal breathing, when the body is at rest, should not include more than ten breaths in a minute. I, myself, get along very comfortably with not more than six, sleeping or waking. During exercise of an ordinary char-

acter the breathing will naturally increase to fourteen or fifteen breaths in the minute.

At the outset long breaths will be a conscious exercise. But the reader must not assume that he cannot develop an unconscious habit because the exereise seems at the start to require attention. Take long breaths as often as you think of it. You may not think of it more than once or twice a day at the beginning. Then you will find it easy to remember every hour or so, and then twice or three times an hour, until finally the habit is formed, and the old short, scant breath—a mere gasp in many people—is entirely abandoned. How soon, and to what extent this habit may be formed will depend to a great extent on the constitution of the person, but the principle is of universal application. A long breath will be found to represent strength, and strength that endures. From the elephant, who breathes eight times in a minute, to the mouse who breathes one hundred and twenty times in the same period, brute creatures are almost uniformly found to possess strength in proportion to the length of the respiratory movement. Curiously

enough it is the animal that most closely resembles man—the monkey—who, in confinement, first succumbs to disease of the lungs.

In all lung exercises endeavor to inflate the lungs upward and outward instead of downward. Carry chest and lungs as if the inflation were about to lift the body off the ground upward and forward. The feeling of buoyancy given by this habit is not an illusion by any means. It is genuine.

There are certain movements which combine the respiratory with muscular exercises. Such a preliminary exercise is indicated in Fig. 6. Take the correct standing position and place the hands together (locking the thumbs), as shown in the drawing at *A*. Raise the hands, keeping the arms straight, and at the same time take in a long breath. When the arms are raised as high as your muscular condition will allow without bending the body in any way, slowly lower the arms again, emiting the breath as they descend. Repeat this a number of times. When the shoulder and chest muscles are in good condition, you will be able to raise the arms straight over the head without bending the body.

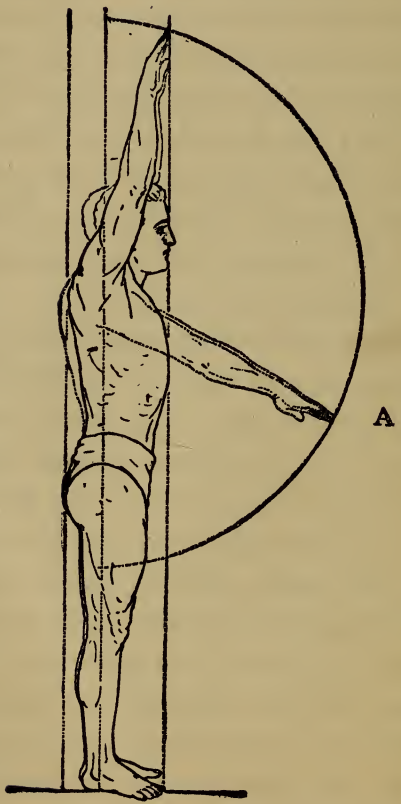


FIG. 6.

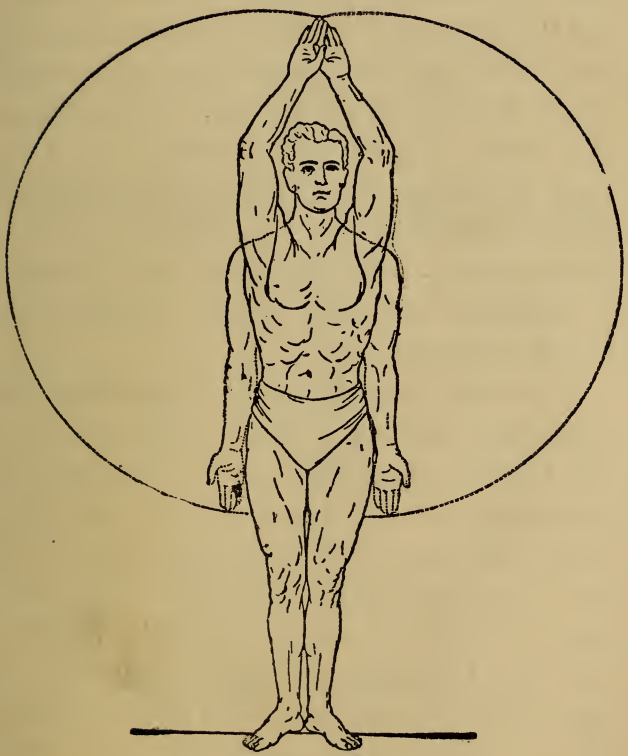


FIG. 7.

For another exercise combining respiration and muscular action assume the same position, raise the hands slowly while taking in a breath, and when they have reached a position over the head hold the breath while they are brought slowly down to the sides. Then slowly release the breath. Again, place the hands over the head as in Fig. 7, and as they are brought to the sides on a perfect line, draw in a breath corresponding in duration to the time occupied in dropping the arms slowly. Release the breath gradually.

For a final exercise in this department the preliminary position is shown in Fig. 8. Having brought the elbows on a level with the shoulders, and the hands on the same line, extend the arms, with hands together as if in the act of swimming, taking in at the same time all the air the lungs will hold. Holding the lungs full, bring the hands around on an outer circle to points on a level with the shoulders, and then slowly empty the lungs while bringing the hands to the original position.

These exercises will be found easy yet exhilarating, and will fill the double office of

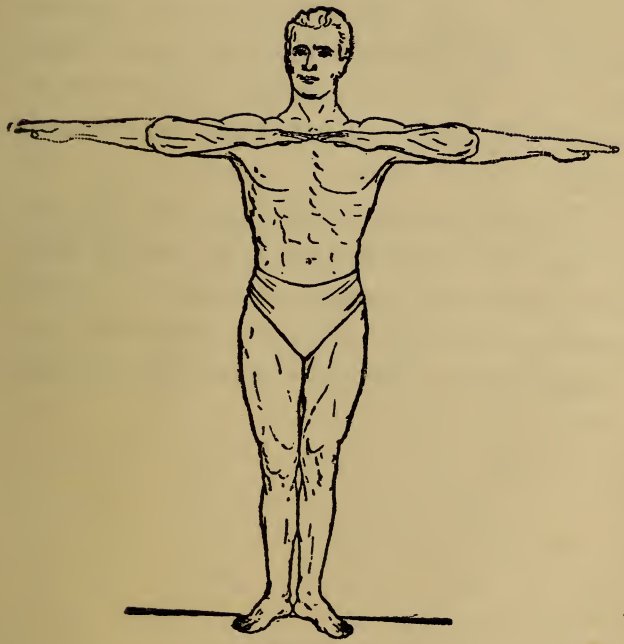


FIG. 8.

strengthening the lungs and developing the shoulder and chest muscles. Practice them after rising and before fully dressing in the morning, and again before retiring at night. It should not be difficult to find some opportunity for this practice some time again during the day. These movements should not be performed more quickly than ten times a minute.

It is well not to overdo these or other exercises at the outset, since, by unduly tiring the muscles, the pleasure of exercising on the ensuing day will be largely destroyed by a sense of pain. Nothing is gained by straining.

IV.

MUSCLES AND WHAT THEY DO.

BEFORE passing to the general training of the muscular system it cannot be inadvisable to pause for a moment and consider what a muscle is and what it is capable of doing. I have more than once seen men, speaking of their power to strike a blow, proudly touch the bunch of muscle on the top of the upper-arm, as if that supplied the power in striking, when, in fact, it is the muscles on the back of the arm that supply the force by which the arm is straightened. Incidents of this kind furnish a reminder that very few people realize the character—the structure—of muscles, or understand clearly the functions they perform. Indeed, judging from the systems of training now so common, and the conduct of athletes in general, it seems questionable whether a knowledge of the muscles, their

needs and application, is even as well diffused as many have supposed.

Generally speaking a muscle is formed of a mass of small fibres running parallel with one another, and possessing a power of contraction more or less great, according to their health and training. This power of contraction draws closer to each other the two ends of the muscles, and by so doing brings the bones to which the two ends are attached that much nearer together. The muscle is attached to the bone by white, unelastic cords called tendons. These tendons are so strong and so securely fastened to the bone that the sudden contraction of the muscle in pulling is more liable to snap the bone than the concussion of a fall itself. Muscles, indeed, break a great many bones in one way or another.

The muscles of the body are arranged for the most part in complimentary groups, by which they act together, pulling and relaxing as the case may be. Thus in the limbs the muscles which straighten the bones are called the *extensor* muscles, while those that bend them are called *flexor* muscles. The *biceps*

on the front of the upper arm are *flexor* muscles, because they pull up the fore-arm. To straighten out the arm again the *triceps* on the back of the arm exercise their office as *extensors* In the same manner the *flexors* of the leg are on the back and the *flexors* of the hand are on the palm.

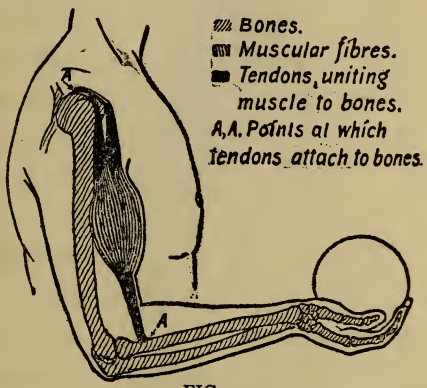


FIG. 9.

The accompanying illustration (Fig. 9,) will give an idea of the manner in which the biceps act in bending the arm. The tendon joins the forearm not far below the elbow joint, thus giving the muscles a very quick leverage on the arm. With so short a hold, however, this muscle requires great power. Of course in flexing the arm, the forearm muscles—which, in their turn, are united with the upper arm—are also brought into play. When the muscles on the front and back of

the arm are both drawn at once the limb becomes rigid. The same remarks apply to Fig. 10, which shows the chief muscles that carry the body on the toe. The bone of the heel forms a sort of lever upon which the contracting muscles in the "calf" of the leg operate.

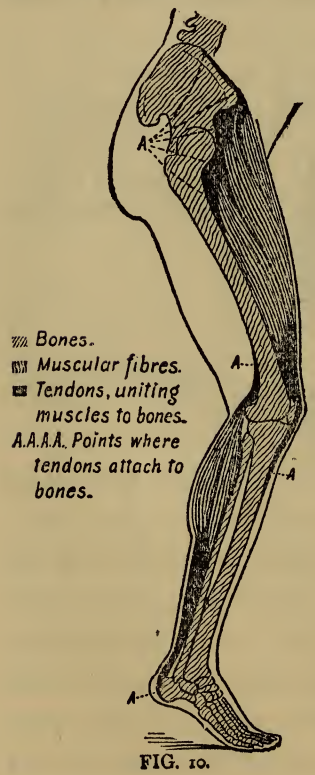


FIG. 10.

In order to feel any of the muscles to the best advantage establish some resistance—such as a weight in the hand to discern the flexors, and a pressure downward against some obstacle to watch the action of the extensors — the muscles on the back of the arm. The function of the muscle is thus to *pull*. Every movement of which the body is possible is brought about by the *pulling* of one or more

muscles. The pulling is, as I have said, accomplished by the contraction of the muscles, and this power of contraction is inherent in them. It belongs to their very nature; for while our will generally telegraphs through what are called the motor nerves what it wishes the muscle to do, the muscle will contract under certain circumstances without any order from the will. Indeed, if a muscle is removed from the body it will still contract under stimulus from pinching or from the sting of acid. Of course it is the duty of every healthy being to keep the muscles as perfectly under the control of the will as possible. The partnership between the brain and the muscles should be complete and continuous. It may be set down as an absolute truth that no one will become unconscious of his body in the right sense until he has first become thoroughly and intelligently conscious of every part of it.

Now the contractility of a muscle, the power it has to shorten and draw its ends closer together, depends on the extent and condition of the *fibres*, the bulky part of the muscle as dis-

tinguished from the hard and uncontractable tendons. These fibres, looking, when highly magnified, like a bunch of red worms all stretched in the one direction, form the *meat* of the body as distinguished from the bone and gristle. In fact, the muscles make up in weight more than half the bulk of the body. From this it may be judged without argument that the health of this machinery is of very great importance to the health of the body. The muscles are not implements which may or may not be used and cultivated according to the taste and pursuits of the person. They must be used and developed or the body will fall into ill-health. They are more than half of us and must be taken into consideration in a serious and intelligent manner.

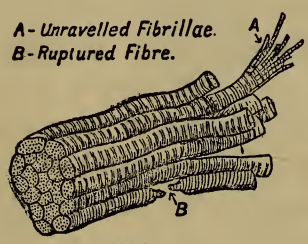


FIG. 11.

The chief reason why the muscles must be kept in use is that their health directly effects the circulation of the blood, and upon the perfect circulation of the blood physical health is

greatly dependent. The moment a muscle is put in action the blood dances through it with increased speed. As it develops, more and more blood is called to supply it. In its greatest heat it is greatly charged with blood. It is for the same reason that *all* of the muscles should be called into play in the general carriage and use of the body, for if the activity of certain muscles quickens and improves the circulation, and the disuse and ill-health of other muscles disturbs the circulation in another part it is quite plain that the general circulation will be at a loss. The result will be coldness in the feet and hands, and a constant danger to the weaker organs of the body. A sluggish circulation, resulting from the disuse of large areas of the muscular system, means many terrors to the unfortunate victim. Neuralgia and kindred complaints are a frequent result of inactivity and confinement. The first step toward a cure of such ills should not be drugs, but studious deep breathing and exercise.

People are frequently astounded by the great strength of an athlete. The trained man, lumpy with muscles and glowing with health,

lifts some tremendous weight and carries it for a distance. The feat, incredible to the hearer, is scarcely comprehended even by the spectator. What does it mean? Are the athlete's direct lifting muscles so much beyond the normal in power?

The truth is that the athlete's effort is successful, not so much because his individual muscles are greatly superior to the same muscles in the normally developed man, but because he *uses more of them.* The majority of people do not know half the muscles they own. If they unexpectedly make use of a muscle long left out of account and in a half dead condition, it gives them a twinge, they are frightened off. They rub it with arnica and endeavor never to use it again. They lift, carry, stoop, reach and climb with scarcely a majority of their muscles. Of course, in a violent exercise like some forms of dancing, a large proportion of the muscles are brought into play, but many of them only slightly and only under such exceptional conditions. It is in an understanding of the scope of the muscular action in a given movement that a man will secure power in that movement.

Take the case of a blow with the fist. In a gymnasium a number of young men will gather near a suspended sand bag. One after the other will hammer at the object forcing it to swing at various angles. The owner of perhaps the stoutest arms only sends it out at right angles. Then steps up a young man of comparatively light-weight and triceps inferior in bulk to those of many of the others. This young man strikes a blow at the bag and it bounds clean over the point of suspension. How did he do it?

In the first place the young man knew the right moment in the extension of the muscles at which to make contact with the bag; but particularly he knew how to throw all of his muscles and all of his weight into the blow. He used every muscle he possibly could, down to the tendon Achilles in his heel, and he made every one do all it possibly could.

The continuous health and use of all the muscles will thus not only have the effect of securing that great boon to the system—a free circulation—but it will give an incalculable advantage in every muscular effort. The body

acquires not only greater power, but greater ease and grace. It acquires in general the great sustaining power of distributed responsibility. A man or woman who holds the body erect, or in any necessary posture, with the aid of but a few trained muscles, possibly supported by a few others that are occasionally called into play and that soon tire, grows fatigued much sooner than one whose weight is carried by a well-drilled army of fibres, fully supplied with stimulating blood.

When it comes to training the muscles, their relation to the blood circulation should never be overlooked. That this relation is continually overlooked in modern athletic training I need scarcely say. It is very well understood that modern training is too often engaged in making muscles "hard," as if their mere hardness was a sign of the most valuable condition To be sure a man covered with hard muscles will often display great immediate power, but not of endurance, and of after health he can have little chance.

The highest state of health and power in a muscle will always lie in its flexibility rather

than in its hardness. A man trained until his muscles "feel like iron," is really in a dangerous condition. He soon gets out of "training," and is then immediately at a loss. His muscles feed upon his vitality, and, especially when he has passed middle-life, threaten his general health. A man so "muscle bound," as the saying goes, is not in possession of a power. The power owns him.

On the other hand, a man who keeps his muscular system in a state of comparative softness and high flexibility can not only summon great strength, but his powers of endurance are surprising. He is, too, easily kept in training. Natural exercise will preserve his condition, and he is at any time ready to train for special effort, if that is necessary, without shock or inconvenience.

Muscular exercise, however slight, results in a waste of tissue in the flesh fibres, and this waste is carried off. During repose the blood returns new material, and the stimulated action increases the area of blood circulation and enlarges the muscular mass. When exercise is properly conducted this waste and renewal

go gradually and easily forward, preserving complete health in the parts and steadily increasing the resources. But when the exercise is unnecessarily violent the destruction of tissue is injuriously carried on. The process of repair cannot so nicely supplement the waste as in the case of reasonable exertion. And when exercise is introduced infrequently — after periods of almost complete inaction—it cannot atone for the sin of collapse. It will not do, as I have suggested, to sit, stand and move badly for ninety-nine one hundredths of the time and then hope to make things come out even by one per cent. of right exercise.

The muscles will have the greatest health, strength and "staying" power that are kept flexible and full of blood by continuous use in every day life. To expect them to keep healthy by an infrequent fifteen minutes at some machinery, is as unreasonable as to think of preserving the comfort of the stomach with one meal a week.

V.

THE JOINTS AND THEIR DEVELOPMENT.

THIS is not a surgical treatise and my desire is to spare the reader or student as much as possible of dry, scientific detail. But the most common-sense view of this training matter, especially if we are to work from the inside, demands that we should constantly keep in mind the structure of the body. We have a certain physical system to work on. That is our foundation, and it will be of no avail to ignore either the limitations or the possibilities of that system.

I have never believed that the creator had this or that *intention* about the body. If the creator had any definite intention about the physical machinery of man, it was that that machinery should be of the utmost service to

man, and that it should be made all that its owner can make it. What we really mean when we speak of intention is that the splendid mechanical arrangement of the bones and muscles seems to have an especial adaptability to this or that function. I have already spoken of the beautiful versatility of the human physique. Man's bone structure gives him a scope of movement nowhere equaled among the lower animals. This is because man's intelligence has taught him to aid his own development in every useful direction. The horse, for instance, with its short collar bones and undeveloped latteral muscles, has all of his power in forward and backward movements, and almost none in movements to one side or the other. Every one has noticed how difficult it is for a fallen horse to raise himself. The horse has only developed the muscles that are most useful to him in the service of man. Man finds so many uses for his own joints and muscles that he is continually bringing them to a higher state of versatility.

But he by no means uses his bone system as it might and should be used. He gives

only a half-use to his joints as he gives only a half-use to most of his muscles. This is very largely because he usually has but a very slight knowledge of the actual location and capacity of his joints. He bends his spine in stooping as if there were no hip joints in his anatomy. It is often remarked that man first ascertained the location of his stomach when an indiscreet meal brought confusion in that locality. Most of us forget about the joints until some novel slip or movement gives the unused machinery a twinge, and then, instead of following up the lesson and making that joint serviceable, we are very liable to avoid any further service in the offending part.

The extremities of two or more bones forming a joint are covered with cartilage, which, as I have said, is a solid but softer substance than bone, and one whose smoothness and elasticity keep the ends of the bone from wearing. As in the case of all other material of the body, this cartilage is in best health when the function it has is evenly and naturally exercised. The cartilage is covered with a thin layer called the *synovial membrane*, and

the joints are continually oiled and kept in working condition by a fluid called *synovia.* Then a series of tough bands, called *ligaments*, hold the heads of the bones in proper position.

Joints like those at the knee and ankle are called hinge joints, while others, like those at the shoulder and hip, are ball and socket joints. One is constructed very differently from the other but both are operated on the same principle and have the same general conditions of health and strength.

The joint itself, if we were to mean the bones merely, has all the flexibility that the surrounding ligaments and the connecting muscles will give it. That the difficulty of bending is not in the bones but in the ligaments and muscles about the bones will be illustrated by the fact that one has little difficulty in placing the knee against the chest. But stand upright and endeavor to carry the chest toward the knees and the operation is found to be very difficult. Or endeavor to lift the stiffened leg toward the chest, and it will be found impossible to acquire the whole distance. This is because the muscles and ten-

dons have not been trained to sufficiently accommodate themselves to the severe relaxation. When the joints are not fully trained by use the same difficulty will constantly arise, and even in the minor movements.

The ligaments are necessarily made to hold the bones very firmly. If they did not cases of dislocation would be much more frequent than they now are. When a bone becomes dislocated the ligaments and muscles draw the points of union past each other. In the case of the shoulder this is not a very serious affair, for that joint, being relatively in a state of high flexibility, may usually be reset without great difficulty. Many contortionists can voluntarily dislocate one or both of their shoulders by muscular action, and restore their position without difficulty. But in the case of the thigh, for instance, the situation is very different. A visitor to a hospital will often observe a patient lying with one leg extended on a support ending in a pulley and weights. The weights, sometimes of many pounds, are "tiring out" the contracting elements about the joint. When they are sufficiently "tired" by the pro-

longed pulling, and acknowledge themselves beaten, the head of the dislocated bone is placed in position and the muscles again acquire the necessary contractility.

It is thus important that in developing the muscles of the body the office of the joints should be kept in mind. The bones are not insensible material but contain a blood system, a life and sensitiveness equal to that of the other parts of the body. They are, in fact, as much dependent upon exercise for health as the muscles. Moreover, a bone may be increased in dimensions by exercise, so that the chances of increasing the height and building out the frame by carrying the body in the best manner. will be aided by the actual growth of properly exercised bones.

The proper use of the hip joint is, perhaps, most frequently ignored. As I have suggested the bones of the spine are continually strained, the chest contracted and the abdomen distended in an effort to save the hip joint and the muscles affecting its use from performing the service that belongs to them.

By frequent and easy practice the hips may

be made what they should be—the natural hinge in the middle of the body. Begin by ascertaining with the finger the location of the hip joints. Place the middle finger of each hand on the corresponding hip joint—at the exact locality of the hinge—and the thumbs of each hand on the edge of the hip or pelvis itself. Now bend forward and the relation of the pelvis bone to the leg joint will be readily perceived by the touch of the thumbs and fingers. The action of bending is, indeed, a backward movement of the hinge of the body and not a forward movement of the head as the beginner generally assumes. Let the conscious movement be in the hips, and preserve the natural relations of head, neck and back. Repeat several times the motion of bending from an upright position to a point as low as possible *without bending the back.* At the outset a stick of any sort—a broom handle if you choose—may be held with one hand upright against the spine, head, hollow of the back and foot of spine, all touching, while the stooping over is tried several times, until the straightness of the back is secured, and it becomes plain that the hips

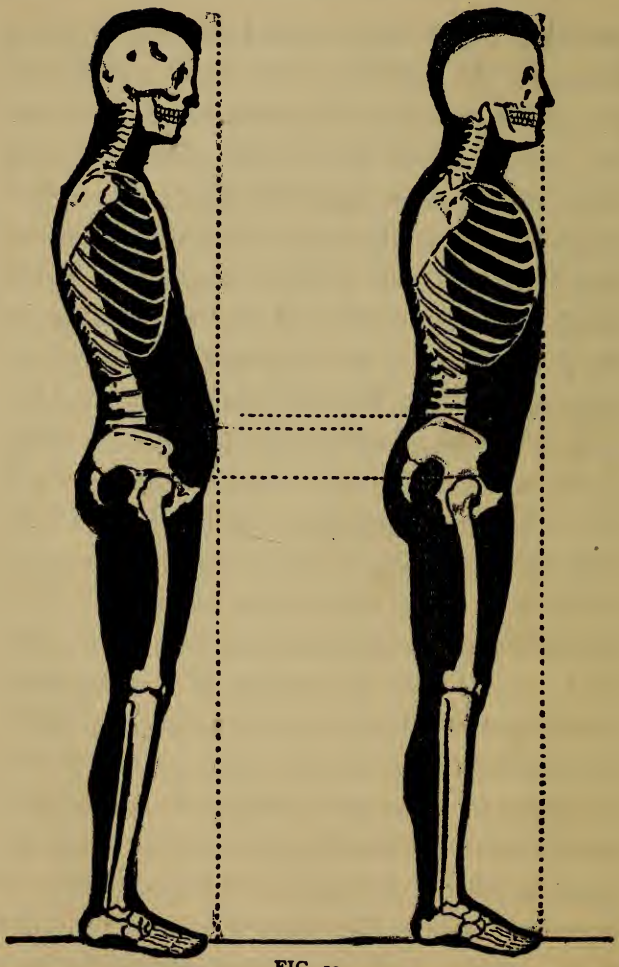


FIG. 12.

Illustrating the bone system of the body as seen in the incorrect and correct standing positions and the manner in which the proper use of the hip (or pelvis) and back muscles may increase the height and symmetry of the body. The figure to the right is that of a man naturally two or three inches shorter than the figure to the left.

are doing all the bending. When the motion is first tried the pupil invariably arches the head and neck, and perhaps hollows the back.

For the purposes of this practice guard against any movement of the back or neck, and the value of these fine hip hinges will begin to appear. Repeat these movements with the hands raised above the head. Then bend forward as far as the hip joints will allow, throw the shoulders up and forward, and touch the floor with the tips of the fingers, without bending the knees. The latter movement is a familiar feature of the military "setting up" drill and is of great value. When first attempted it is generally found difficult, though some persons, with no special effort, easily bend in this way. After repeated practice it will be found possible not only to touch the floor but to hold the fingers there, then to touch and hold the second joint of the fingers and finally, perhaps, even the palms.

The action of the shoulders in this movement brings up the importance of developing the shoulders. The power of the shoulder movement in itself is surprising. Stand up-

right in the correct position and lift the shoulders as high as possible, lowering them afterward as far as they will go. Now bring them forward and draw them back as far as they can reach in each direction. Repeat these movements and endeavor to keep the shoulders flexible and vigorous. By training the shoulders the clavicle, or collar bone, with the other bones and muscles involved, increase the width and general bulk of the shoulders.

A special exercise for the development of the shoulders with the muscles of the back and sides is this : Stand sideways near some vertical surface, like the wall of a room, at a point sufficiently distant to allow the hand when extended to easily touch the surface. Now move an inch further away and touch the surface again without altering the position of the feet, legs or pelvis (Fig. 13.) A second time move an inch and this time there will be some difficulty in reaching. Repeat the movement until the surface cannot be reached, then do the same with the other arm and shoulder. The effort to reach will draw out and straighten the shoulders, and it will be discovered that the shoul-

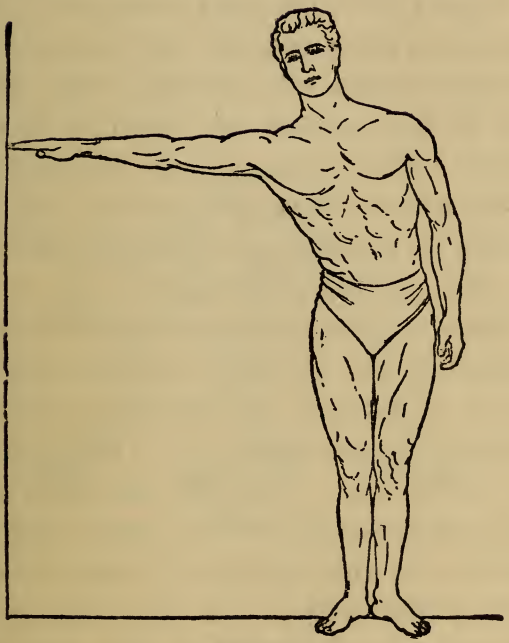


FIG 13.

ders can be made to have a distinct lateral extension. Stand with the back to the wall and the arms extended and make a pencil mark at the ends of the second fingers when the shoulders are most contracted. Now reach out as far as possible each way, and the difference in reach will be found, at the end of a few of the exercises just given, to steadily increase. After a few months of reasonable practice with the shoulders the tailor may, if it has been his practice, be requested to leave out the cotton padding in the coat.

There is a complimentary action between the shoulder and hip that is well illustrated in the act of stooping. An effective method of stooping is shown in Fig. 14. The first bending is of the knee. Then the hip hinges work and the body bends forward—partly move the shoulders, by which the hand is easily brought to the ground without the wrenching of the spine and the discomfort of both lungs and abdomen. In such movements the tendency is to distend the abdomen, but in this and in all similar movements the abdomen should be *contracted* and kept under muscular control.

FIG. 14.

In the same manner when seated do not reach over a table, for instance, by curving the back, but by throwing forward the shoulder. If this does not bring the hand near enough the object, bend at the hips. The great value of a flexible shoulder in reaching is shown by the fact that, with the spine firmly held against the back of a chair, the hand may, with practice, be osillated in a direct forward reach from two to six inches.

I have thus far but sketched the value of a proper training for tne joints. In another chapter I shall take up a series of exercises bringing both joints and muscles into play.

VI.

EXERCISES FOR MUSCLES AND JOINTS.

ALL exercises of the joints involve certain exercises of the muscles, but there are some that involve simply a relaxation of certain muscles with only sufficient tension in others to keep the body erect meanwhile. Such, for instance, is this useful exercise for the attainment of flexibility in the pelvic region or the region of the hips :

Take the correct standing position, then relax the muscles so as to permit the whole weight of the body to fall on the left leg, allowing the right leg to bend and the right hip to sag down as far as it may. Now transfer this weight to the right leg and allow the left hip to drop as loosely as possible. This would be a very bad position to stand in, but the exercise

of transfering the weight from one side of the pelvis to the other, gives increased flexibility and vigor to the muscles and ligaments of this region, and will give increased elasticity and endurance in walking. On the first occasion the exercise should be repeated slowly, and might last one or two minutes. After renewed practice it will be found easy to drop rapidly from one hip to the other without inconvenience and to prolong the exercise for four or five minutes.

The training of the spine should be carried on with the training of the pelvis, from which bony framework it rises. In pointing out that the spine should not be bent in every stooping and reaching movement, the theory was not that it was to its disadvantage to bend, but that the habit of bending forward needlessly hampered the lungs and digestive region. The spine itself should be thoroughly exercised, for the same reason that other regions should be kept in reasonable activity.

To give the spine a flexibility necessary to the comfort of the body it should be frequently moved in all directions consistent with its

structure. Under proper cultivation the spine has great versatility of movement. Between each of the bones of the spinal column are disks of "fibro-cartilage," as the anatomists call it, a substance which operates as a cushion between each section of vertebræ and constituting a continuous safeguard against accident to the great bone centre of the body. These cushions form actually about one-fourth of the spinal column, and they not only render the column susceptible of modification, so far as its lengthening or shortening is concerned, but they make it possible for the column to twist vertically to a considerable extent. Numerous ligaments, forming a beautifully complex structure, hold the whole system of bones and cushions in position, and the stout muscles of the back hold an intimate relation with them. It is these ligaments and muscles that require to be treated in the exercise of the spine.

An exercise of a simple but effective character is acquired in this way: After assuming the correct standing position, extend the arms until the hands are brought on a level with the shoulders. Holding the arms and shoulders

upon a straight line and keeping the arms directly opposite each other, as if actually held in position by a long pole passed across the back of the neck and held in position by the thumbs (this plan may be followed if desired), swing the arms and shoulders in unison, first in one direction and then in the other until the line of the arms, at the extreme tension of the swing, is as nearly as possible at right-angles with the first position. Swing in this way at the rate of about twenty movements to the minute until the muscles of the shoulders and back feel tired. The greatest flexibility will be found in the upper region of the spine—a slight flexing of each section of the vertebræ, giving an aggregate twist that will, with practice, become considerable. If the arms do not swing the shoulders with them, the exercise will have little value. And it is to be remembered that the hips should, during the exercise, keep their natural position and not swing with the shoulders.

A variation upon this exercise is illustrated in Figs. 15 and 16. In Fig. 15 the arms are brought to a position at right-angles with their

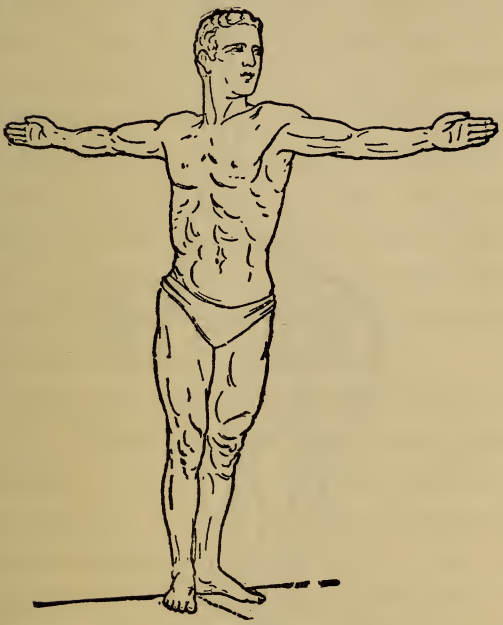


FIG. 15

FIG. 16.

original line, the hips in this case being turned slightly. Now, keeping the arms rigidly opposite each other, bend the left arm downward, at the same time bending the left knee only, and touch the floor between the two feet, as shown in Fig. 16. Raise the left hand until the arms resume the position of Fig. 15, and swing the arms about until the right hand occupies a forward position. Bending the right knee (the left being kept rigid), the floor may now be touched in the same manner with the right hand. These positions may be alternated at the rate of about fifteen changes to the minute. The exercise is an excellent one.

In the two movements just described keep the face directed toward one point in front of the figure. By so doing the neck will be given some work to do and will be strengthened in all repetitions of the exercise. To further strengthen the neck—and a development of the neck muscles will prevent many a headache that arises from no other cause but muscular fatigue—stand with the back against a wall. Without moving any part of the back or shoulders away from the wall, move the head for-

ward and back a number of times, keeping the face on the same vertical line as when the back of the head touches the wall. Then practice a side to side movement of the head, *without altering the vertical line of the head*, as in Fig. 17. In this second movement it will be found very difficult at the beginning not to roll the head, but be content with a slight movement at the outset, and in time it will be found possible to oscillate the head several inches without altering the vertical line.

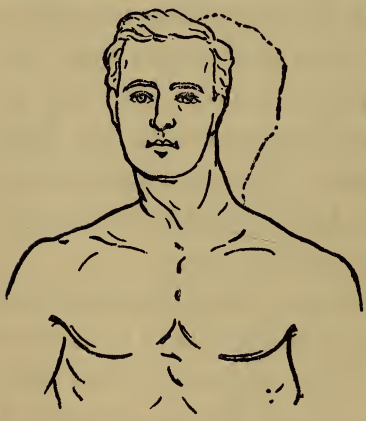


FIG. 17.

The great advantage of movements of the neck, in which the head is managed independently, is an increased control of all the muscles in this region of the body. It is thus not merely the *exercise* of the muscles that all these movements are designed to accomplish, but the *control* of the muscles, so that every muscle may, in so far as that is possible in ordinary

training, be under reasonable control. The value of such perfection of control I cannot reiterate too frequently. The exhilaration, the increased local strength, and the increased general health, are certain to render control worth the effort.

An exercise of much value in perfecting the poise and supleness of the body, and in strengthening the legs, is illustrated in Fig. 18. Assume the standing position, with the hands at the sides. Draw the arms backward until the hands are about eighteen inches from the vertical line of the body, relax the leg muscles and drop quickly into the position shown in the drawing. As the body descends, bring forward the hands, and by continuing their swing the balance of the body will be better preserved while it sinks and rises again to the first position. The natural elasticity of the muscles will tend to send the body upward again after it has dropped upon the heels, and the movement may be repeated, according to the condition of the muscles, from three or four to a dozen times. Remember to keep the body above the hips perfectly upright during the exercise.

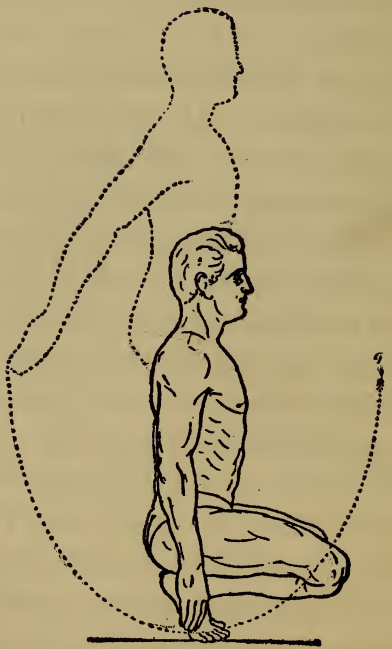


FIG. 18.

Another exercise benefiting the legs, hips and chest: Place one foot before the other as in stepping, rise on the toes (or, properly speaking, the ball of the foot), and springing slightly transpose the relative positions of the feet so that by a regular repetition the effect will be as of a still walk. The arms may be swung in sympathy with the movement. During the exercise practice a long and steady breathing —with the lips closed, of course.

It will he observed that while some of these exercises place considerable tax on the agility of the muscles, there are none of them violent. Dozens of other movements pursuing the same line of development will readily occur to one who enters upon practice. My purpose is always to lead the pupil by gradual steps to the point where he or she shall feel a perfect familiarity with and mastery of all the muscles of the body. When this has been accomplished, in connection with the development of the lungs, the pupil is ready for the heavier athletic training, with which this book is not concerned, and with which all but a small number of people have neither the time nor the necessity to be interested.

Even sedentary people will find many ways of amplifying in practical exercise the foregoing special exercises for the lungs, muscles and joints. Yet it is necessary to avoid violent experiments. In lifting anything whatever, endeavor to bring all the necessary muscles into play. The action will require a certain amount of thought, for in a spasmodic effort it is easy to seriously strain a few muscles left to do an involuntary service. In fact, a failure to concentrate effort in the right manner often does an injury, when the movement intelligently made exhilarates without straining or "winding" the person.

In his recent scientific work on the "Physiology of Bodily Exercise," Dr. Lagrange emphasizes this point: "Exercise," says the writer, "performed without moderation or rule induces all forms and degrees of fatigue, and exposes the human machine to various injuries which we have described as the accidents of work. On the other hand, muscnlar work performed in gradually increasing quantity and according to the rules of graduated training, bring about a progressive adaptation of the

organs in the performance of more and more violent exercise. It improves the human motor by giving to all its machinery a greater strength and ease of working. Such are the results of exercise considered as an abstract factor and reduced to the *quantity* of work represented by it. But it is only by a mental effort that we can isolate the work done by the system from the organs concerned in the performance. Now these organs are not the same in all cases, and do not work in the same manner in all forms of exercise. Thus, the practice of different exercises produces different effects on the system. Hence the use of a rational classification of the different exercises, and the necessity of making a choice from among them in accordance with the effects desired."

Light exercises and exercises that vigorously tax the strength each have their place and value. The point is that they should not be misplaced. The exercises given are designed to *awaken* the muscular system, to give it flexibility and readiness, and it will be found when the training on these lines has been

carefully advanced, that a heavy demand on the muscles has no terrors, that the general strength has been splendidly increased in a degree entirely out of proportion to the increased size of the individual muscles.

VII.

THE TREATMENT OF OBESITY.

"LET me have men about me that are fat," says the Cæsar of Shakespeare's play. But then there may be too much of a good thing. There is a happy mein between the "lean and hungry" proportions of Cassius and the too ample outlines of the Leicester gentleman who, early in this century, carried to his grave a body weighing 789 pounds. In our own day, with all the hurrying and scurrying brought by the Twentieth Century method of living, a large number of people suffer from an accumulation of fat, and the treatment of persons so afflicted receives much attention and calls up many ingenious schemes and suggestions.

The most popular method of combating corpulency is by dieting. A thousand and

one pamphlets and patent medicines bear promises of salvation for the afflicted fat. Many a worthy person has suffered the agonies of semi-starvation in an effort to reduce his weight, and has sometimes succeeded in getting rid of a few pounds. Many others have chosen to "eat and drink" if they cannot "live and be merry," preferring the inconveniences and dangers of corpulency to the tortures of a greatly restricted diet.

So long as certain articles of food are recognized as having greater properties for producing fat than others, it is plain that dieting may have some influence on the quantity of fat accumulated. But it only succeeds in reducing the formation of fat, and does nothing toward getting rid of fat after it is formed. In a person otherwise healthy this can only be done by exercise—not merely abstract "airings," which fleshy people sometimes consider exercise, but locally applied exercise, intelligently and conscientiously pursued.

Regarded rightly obesity is simply a disease and must be specifically treated like any other disease. When the natural functions of the

body proceed without interruption there can be no accumulation of fat. It is only by the failure of some natural process that fat increases beyond the desirable point.

In the growth of the body-materials fat is accumulated and consumed again just as steadily as coal is burned in the engine, or as the chemical ingredients of an electric battery are gradually exhausted. This fat feeds the muscles—every muscular effort producing a certain amount of combustion. If the muscles are not exercised, the fatty substance, which would be burned up and carried off by the action of the muscles, steadily accumulates.

The accumulation of fat under the absence of exercise operates against its owner in more ways than one. Not only does it increase his weight, retard his movements by increasing bulk, and interfere with his breathing, but it unduly heats the body. The blood of a fat person is likely to become overheated, and is difficult to cool. Thus these excessive layers of fat, operating like so many excessive layers of clothing, are a constant menace to the comfort and the health of the body.

Exercise directly attacks superfluous fat. How much fat may be superfluous depends upon the constitution and temperament of the person. Under the most vigorous training some people retain a good deal of fat. They are by nature plump. But their fat is no detriment to them. They move with as much ease and as little breathlessness as other people. The quantity of fat to be lost under exercise thus depends upon the individual, but will always, of course, be considerable in proportion to the amount accumulated without exercise and under the unrestricted influence of the disease at its height.

Exercise not only reduces fat but it reduces it in the most direct and effective way. In half an hour of vigorous exercise a man may reduce his weight by a pound or more. The rapidity with which fat may be burned off in the activity of the muscles is often, indeed, surprising. This dissipation of fat is local; that is to say, it disappears in localities in which muscles are active, and in proportion to their activity. Thus people will accumulate fat in accordance very largely with their personal habits. Peo-

ple who sit a great deal, yet have occasion to use their arms considerably, will be found with arms having proportionately more muscle and less fat than their legs. Others who are on their feet a great deal, but take little exercise, are often found with relatively slender and muscular legs, while body and arms are very fleshy.

A large number of people, while of seemly proportions in other respects, grow an abdomen that is exceedingly ugly and becomes in time a great inconvenience. This is because, while the general activity of the person is considerable, their abdomen is kept free from muscular action. The worship of the stomach renders people who like to live well extremely jealous of anything that disturbs the region of the stomach and digestive organs. Perhaps eating excessively renders them continually cautious about bending, and at the first signs of a protruding abdomen in a person otherwise slender the protrusion is patted and petted as a kind of symbol of health, when, in fact, it is sometimes, if not very often, a threatening sign. It is at least a prophecy of too much fat, and as such should be looked at askance.

Instead of coddling the abdominal region it is a duty to keep this region as much alive with good muscles as any other part of the body. Where muscles are healthy excessive fat cannot live. Thus the most direct way of removing fat from the abdomen is to establish a healthy system of muscle there. As the muscles grow the fat diminishes. A man may box and fence, and even walk, without losing his terrible abdominal accumulation; but if he centres his efforts at muscular exertion on the abdomen itself the fat cannot stand the attack and will gradually disappear.

To regain muscular control of the abdomen after the control has once been lost is no easy matter. The ability to contract the abdomen observed in persons properly conditioned seems wholly impossible to a person with much fat. It is only by slow degrees that this control can be regained.

The reflex action of health in the abdominal muscles, and the proper exercise of these muscles in connection with those of the spinal and pelvic regions, will be immediate and considerable. All the digestive tonics that were ever

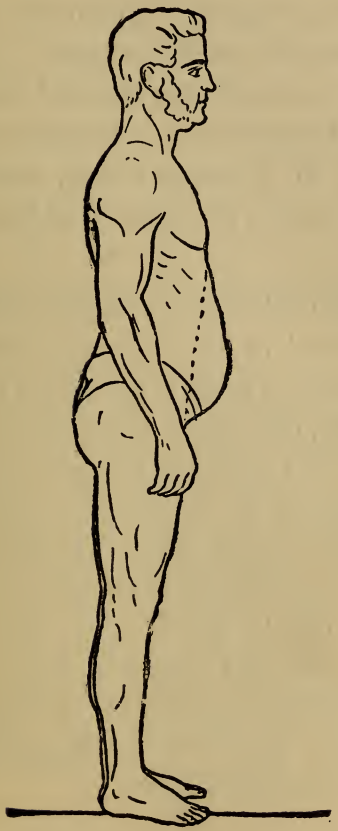


FIG. 19.

Showing fatty abdomen and extent of reduction necessary under training.

invented cannot compete with muscular activity in the digestive region as a means of driving away ills in this region. As a direct means of accomplishing this end the treatment of the abdomen itself is obviously better than exercising in a general way, and infinitely better, of course, than the most heroic system of dieting.

One who follows conscientiously the exercises outlined in the preceding chapters, and who preserves a general activity of the muscles of the body, can never become corpulent, and for those who have just begun to acquire more than a proper or comfortable proportion of fatty material in the body, these general exercises will be sufficient to check and repair the damage. But in this chapter I have in mind those who are too corpulent for comfort and whose immediate concern is in reducing their weight. For these the following series of exercises has been arranged:

First—Contract the abdominal muscles and endeavor to draw the abdomen in and out, without breathing, until entire control of the

muscles is secured. If at the beginning it is found impossible to use the muscles in this way press in the abdomen with the hands as far as possible, and while holding it thus, take several long breaths, resisting any temptation to allow the abdomen to move with the breathing. Pursue this plan until the abdomen can be drawn in and released by the action of the muscles and without the assistance of the hands.

Second—Take the correct standing position (as nearly as may be possible), and straightening the arms bring them forward and upward as far as they may be carried without hollowing the back. In reaching loosen all the muscles of the shoulders that will allow the fullest extension of the arms. The reach should be made forward and upward without removing the heels from the floor, and should be accompanied by a long breath. The motion should be repeated about ten times in a minute and will be found to have a very beneficial effect on the neck, shoulders and chest, while strengthening the lungs.

FIG. 20.

Showing fatty abdomen as distended in bending without control of muscles.

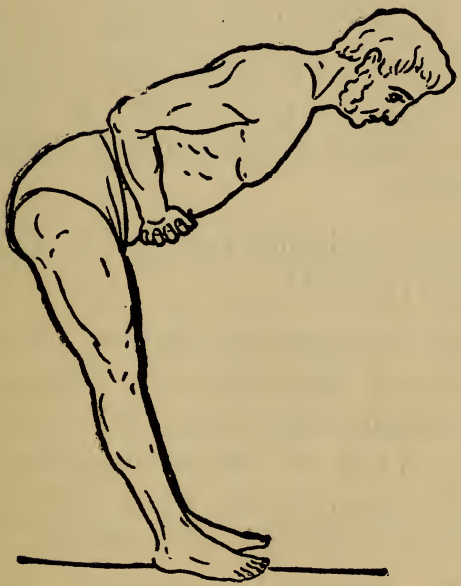


FIG. 21.
Illustrating third exercise.

Third—Clasp the hands over the abdomen, drawing it in to the utmost; take a long breath and bend *at the hips* until the body (without bending the back) is at right angles with the legs as in Fig. 21. Straightening again, the breath should be released without relaxation of the abdomen This motion should be repeated ten or fifteen times in a minute. Its influence will be valuable in establishing a control over the muscles.

Fourth—Swinging exercises, as explained on pages 73 and 74.

Fifth—Swinging and bending exercise as described in Figs. 15 and 16. With a person of much flesh it will be impossible to touch the floor as in Fig. 16. But stoop in the general direction shown by the figure, and carry the movement as far as may be possible. Before stooping contract the abdomen, especially avoiding the tendency to distend it in reaching over.

Sixth—Lie flat on the back, with the hands across the abdomen, take a long breath, and raise the legs (with knee joints stiffened) until

they reach right angles with the body. This must be practiced without arching the back or allowing the pelvis to leave the floor.

Seventh—Lie in the same position with the feet under the edge of a sofa, or some other object that may hold the feet against the floor, and, without the assistance of hands or elbows, raise the body into a sitting posture, at the same time contracting the abdomen.

Eighth—In the standing position: Raise one knee after the other in exaggeration of the action of going up stairs, keeping the body meanwhile perfectly erect, and practice until the knees can strike the chest. The exercise will be very beneficial in reducing flesh on legs and abdominal region.

Ninth—Dropping on the heels as described on page 79.

Tenth—Bending and touching floor as described on pages 63 and 65. A person of much flesh can only attempt this movement, but repeated practice will steadily increase the ability to bend. Have in mind here, as in all other

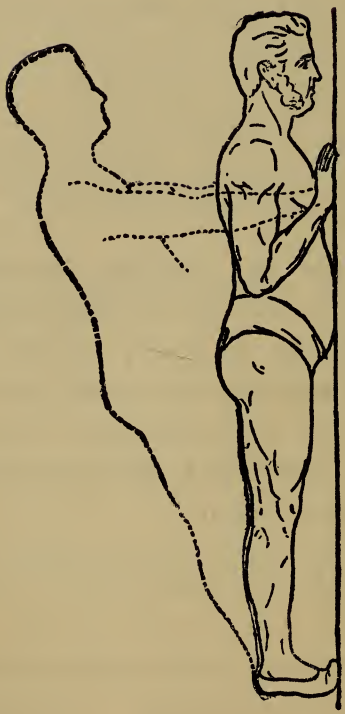


FIG. 22.

exercises, to keep muscular control of the abdomen. Such habits will gradually diminish its size.

Eleventh—Neck motions as described on pages 77 and 78.

Twelfth—Lie face downward on the floor—or, in consideration of that protrusive paunch—get on the hands and knees, then extend the body on hands and toes as in Fig. 22. Keep the body perfectly rigid—not permitting the abdomen to sag and not bending the hips upward to lighten the strain on the muscles. To take this position for a few seconds is all that very heavy persons will be able to do at the beginning. The exercise itself consists in lowering the suspended body by the bending of the arms until the face touches the floor, and the effort should be repeated until this movement can be accomplished several successive times.

All that has been said in previous chapters about the carriage of the body will apply with equal if not greater force in the case of corpu-

lent people. Persistently subdue the abdomen and give the prominence to the chest. Walk with the whole body, and do not move as if afraid of jarring some internal machinery. Give the hips free play, and in walking—the more of this the better—practice the contraction of the waist muscles. In this way a continuous training—the only training that is effectual—is kept up, and the result will be immediate and lasting.

It is to be remembered that all the fat of the abdomen is not superficial like most of the other fat of the body, but is largely internal. Yet this internal fat is susceptible of reduction by pressure and exercises, and should not be encouraged to increase in bulk.

VIII.

TRAINING FOR WOMEN.

IT has already been suggested in these chapters that the exercises outlined applied as well to the training of women as to the training of men. I do not think any of the exercises described need be forbidden the gentler sex. The muscular and bone systems of men and of women are so much alike that what is good exercise for one is, except in cases of particular weaknesses, good exercise for the other. There are, however, certain of these exercises that women, especially if their health is not fair, should enter on with caution. This is all the admonition that need be made. Avoid the chances of shock to the pelvic region. Avoid also the chance of strain. If an exercise seems to make a great demand on any of the muscles, acquire perfection in that exercise by degrees,

being content to gradually acquire control of the stiffened fibres and joints.

This suggestion would be unnecessary if so large a proportion of woman kind did not neglect the simplest principles of bodily health. The "weaker" sex would occupy no such position of relative weakness if natural laws were followed. If women must, as is so freely claimed, remain physically short of man's strength, there is no reason why the disparity should remain so great as it often is. Where women lead an active life their strength and endurance comes remarkably close to the strength and endurance of the other sex, and in the control of their own systems may readily under development excel the other sex. In other words, tradition has more to do with the "weakness" of women than has nature.

It is very doubtful whether very much can be done for the development of physical strength and the higher health in women until something is done toward materially reforming women's clothing. I think I hear the reader say, "More harping on dress reform!" But the harping must be kept up until the shackles of

badly designed clothing are stricken from long suffering womankind. Then profitable training may begin.

At the very threshold of healthful development is the obstacle of the corset. Yes, I know that the corset is not so tight as it used to be. Perhaps women no longer lash their corset lace to the bedpost and throw their weight against it. But even a snugly fastened corset is an injury. Is not the proposition to remove the corset met by the suggestion that "we could not hold ourselves up without it?" There lies the mischief. A corset that supports the back, that keeps the back from supporting itself, is antagonizing the first principle of physical development—the perfect muscular possession of the body. It is quite clear from what I have said about carrying the body that any such system can make no terms with the corset. For the corset as a bust support there are now a score of excellent substitutes. Women might reasonably distrust all "supports" save when there is no evasion of this method. In very slender women, with slight bust measure, nothing aids development like honest chest expan-

sion and the strengthening and enlarging of breast muscles. The entire region of the chest is rendered flabby and unhealthy by any support of the central region of the body. On the other hand, fleshy women tempt increased flesh in refusing to develop the torso muscles, by incasing themselves in e nervating corsets that "hold them up" and foster increased fat.

In the case of the bust it is of importance to remember that there is here, as in all other parts of the body, a muscular system. The muscles of this region are, of course, almost invariably unlocated by their owner, and most supports soon leave them unused also. Now, by persistent effort a control over these muscles may be established until it will be possible to voluntarily contract and relax them, with the result that a sunken and flabby bust may be made full and firm. Thus, unless she is absolutely deformed, there is no reason why a woman s h o u l d not develop and mold her entire form by s i m p l y acquiring muscular control of the parts deficient in contour. The gaining of this control requires a distinct effort of will, but the results surely justify the effort.

Corset wearing has a tendency to protrude the abdomen if the old fashioned kind is worn, or to unduly compress it if the straight front variety is used. The illustration on next page preaches a better sermon that can be put in words.

It has already been said that the corset has forced women to breathe somewhat better than men, but women are not less under the necessity of cultivating deep breathing—long breathing. The girdle corset now worn is a great advance over the former high corset, in that it permits much greater freedom in breathing, and consequently cultivates more vigorous bodies. Fortunately there is every reason to believe that the corset is going out of fashion. A great many physicians, by way of rebuke, perhaps, to exaggerative remarks by those who have sought to fight the corset, are inclined to pooh-pooh the idea of its dangers. Of exaggeration there has been plenty, but the truth remains that the corset has exerted and does exert not only a direct deforming influence, but an indirect deforming influence on the whole body. It threatens the very basis of health, a ready circulation of the blood. The distended abdo-

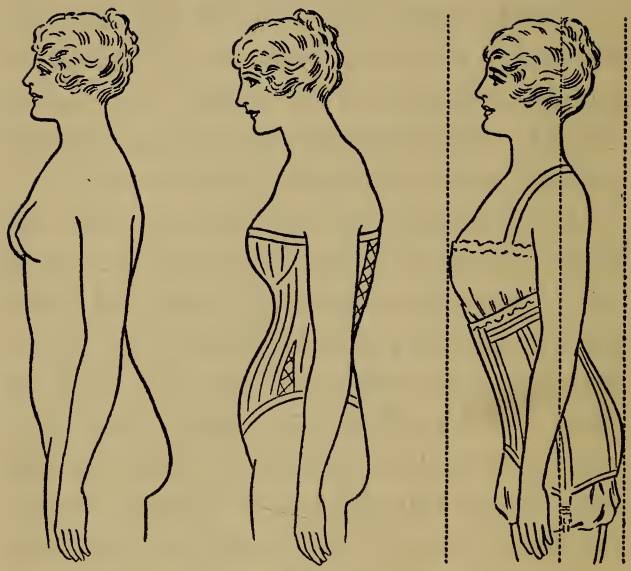


FIG. 23

The first figure shows the natural position, in which the spine is strong and graceful in curve, the chest strengthens, the bust is enlarged by the development of the muscles, and the general grace and health of the body is greatly increased.

The second figure shows the position fostered by the old-fashioned corset, where the muscles of chest and abdomen become flaccid through lack of proper use.

The third figure shows the position into which the body is forced by the modern straight-front corset, and the consequent exaggerated forward curvature of the spine.

The fact that corsets are loose enough not to interfere with the breathing will not prevent the deformities naturally resulting from any contrivance for "holding up" the body.

men so shocking to women, and the great increase of flesh on the legs and feet, are often directly due to the seizures of the corset. The corset is naturally a constant obstacle to free play of the body, to facility in stooping and turning, and tends generally to curb the exercise of the sex.

Among women who have borne children, and particularly among women who have reached or passed middle age, the distended abdomen often brings much distress. Nothing certainly could be uglier, more utterly destructive of grace or distinction in manner. Tightened corsets, that ludicrous last resort of the corpulent, only increases the difficulty. The only direct and effective way of fighting this corpulence is, as I have said in the preceding chapters, by getting muscular control of the abdomen. Cast aside the corset and practice the contraction and expansion of the muscles while holding the breath, and follow all of those exercises that keep active the muscles of the pelvic and abdominal region. Do not be afraid to bend the body.

There is no beneficial exercise that women

so seldom indulge themselves in as high reaching. The modern one-piece dresses and roomy shirt waists permit reaching upward, so that women can indulge in the luxury of muscular freedom in this direction. Reaching may be wrenching, and women should not, in acting upon this suggestion, rashly strain themselves in any way. High reaching with both hands, upward and forward, is very beneficial for both slender and fleshy people. This exercise is actually combined with the breathing exercises given in the chapter on breathing. It should be frequently tried and will be found very strengthening.

Women are often ridiculed in their efforts to throw a ball. They have defended themselves by arguing that their collar bone is shorter than man's. The statement is true, but women are more hampered in all such efforts by their want of familiarity with their shoulder muscles than by any brevity of the clavicle. Practice thoroughly the exercises tending to develop the shoulders and to increase the extension of the arms—not for the sake of being able to throw a ball, but for the sake of the

comfort and strength derived from increased versatility in the shoulder.

An allusion has already been made to the vicious tendency of badly fitting shoes. Women are unquestionably nearer an abandonment of the corset than of the tight shoe. They admit that the Venus de Milo has a large waist. But artists who are generous in the waist-line are slow to wean from the curious tradition that the smallness of a foot is a mark of beauty. Probably ninety-five per cent. of women of all classes are suffering from small or badly designed shoes. Small shoes discourage walking and standing, and those who stand and walk little can never have a graceful carriage. If shoes are big enough the height of the heel will be a less serious affair.

It is unfortunate for many women and girls that skimpy skirts reveal the fact that they walk very badly. "Small shoes" is written as plainly as it could be written in the gait of the average woman. The direct influence of tight shoes on the circulation is very great. When we consider the indirect influence, induced by the retarded exercise, it is hard to

credit the perverse vitality of this wretched superstition.

Women should walk more. They should not take a cab or a street car to travel half a dozen or a dozen streets. Their endurance in shopping is often a surprise to men. But the endurance is an illusion. Men intensely interested for the same length of time would appear as little fatigued. The fact is that women wreck their nervous system at "bargain counters." They should be able to bear the physical strain of standing, but their general strength is so poorly developed that they are actually unfit to do the feats they call on their nervous vitality to perform.

It seems particularly necessary to ask women in walking to turn the toes out. The in-toed proclivity among women is very curious, and has increased the tendency to an inward turn of the knees. The value of an outward turn of the toes lies not merely in any theory of force, nor in the increased strengthening of the legs, but in the influence on the pelvis. An in-toed habit encourages a contraction of the forward pelvic region—an effect whose undesirabilty need not be pointed out.

Women should, in fact, cultivate all the exercises that might give suppleness to their bodies. There can be no grace without suppleness. That complete flexibility in all the muscles of the body which the exercises enumerated have been calculated to secure is absolutely necessary to the charm of carriage which distinguishes one woman above another. Unused muscles, resulting from an absurd idea of the essential restrictions of a woman's position, are worse than no muscles, because they are irritated under tension and retard the movement begun by the muscles that are fit to use.

I believe I am the holder of somewhat radical views about the physical—not to say of the mental—possibilities of women. I have seen in China, I have seen in Germany, I have seen in England types of women, reared under certain conditions, that led me to doubt very much whether the long accepted physical inferiority of woman is indeed a fact. If it is admitted that there is no essential boundary to woman's intellectual possibilities, if she is no longer held to have an uneven chance with the other sex

in matters of the mind, I think it is probably true that she has an absolutely even chance with man in the development of the body. I would ask those women who have, perhaps, rested too greatly on the tradition of necessary "weakness," to take this suggestion into consideration.

IX.

A WORD ABOUT CHILDREN.

WHEN an adult undertakes to train himself, begins to gain control of his muscular system and to "get strong," a large part of his labor is expended in undoing the evil of his previously acquired habits. He has to unbuild before he can build.

The muscular system has here many resemblances to the brain. Indeed, the muscles have actually a memory distinct from functions of the brain. Muscular memory is a physiological fact, and a very interesting and significant fact. Thus in the same manner that first impressions affect the brain most permanently, first habits in the muscular system cling most tenaciously to them. Habits of walking and carriage formed in childhood are very difficult

to shake off. In fact, they are all but impossible to get rid of entirely save by serious mental effort.

Nothing is more important, therefore, than that children should be taught the general principles of right development. It is a mere makeshift to bring forward calisthenics. Nothing could be at the same time more amusing and more pathetic than to stand in a crowded class-room and watch the so-called exercises perfunctorily performed by the pupils during a few minutes of each day. But a small minority of the children give any vigor or meaning to the few insignificant movements of the arms. Most of the boys, and almost all of the girls, are found making merely superficial movements, with no sense of the meaning and no feeling of exhilaration. If anything has ever been said to the children about breathing, the chances are that no tangible impression of the matter has been portrayed. If anything has been said about the carriage of the body, the instructions have been confined to an injunction to "keep back the shoulders." In a nervous effort to keep back the shoulders

children are often found with hollowed backs and shoulder blades driven in against the spine.

What is wanted, of course, is not backward carriage of the shoulders, although this has some utility, but a forward carriage of the chest. The shoulder should not be drawn back of the hip joint line. There is no force in shoulders excessively drawn backward. If they are far enough back to give the fullest freedom to the development of the chest, they are in a position to acquire all necessary strength.

Most children are wont to protrude the abdomen in standing, and when school begins the shoulders soon come forward. Teach a child to assume the correct position, giving up whatever time may be necessary to teach the proper line of chest and shoulders. It will soon forget about the correct position, but, when reminded by a touch or word, will soon learn to assume it, if only for a few moments, and the habit will gradually be formed. That the child should know how to stand correctly, and should assume the position at intervals, will of itself have a good influence.

Naturally, breathing is the most important

of all features of training. Most children need very little studied exercise, but they all need specific and continued instruction in breathing. Nature has not provided for a natural development of the mind, and we have no right to assume that the body of its own accord, particularly under an artificial condition of life, acquires right habits of performing all its functions. Induce the children to take long breaths. Make them take a pride in swelling the upper chest and in drawing the abdomen in and out while holding the breath. Induce them to take deep breaths while dressing in the morning and again before going to bed, if not oftener. These habits develop by their own movement if once fairly begun. Lungs fully inflated at regular intervals will seem to call for inflation during these intervals, and involuntary deep breaths will, as I have said, gradually increase in frequency to the immense improvement of the child's lung power and general health. The *sternum*, or breast bone, is, in a child, not only divided into eight pieces, but its whole material is soft, and very little training will give a fine, swelling chest to a youngster that might other-

wise grow up flat and weak in that region. Watch the child in sitting. It need not be kept stiffly seated upright. Children should know their position and should be able to assume it for a few moments on occasion. But they should be allowed the greatest possible freedom of posture and movement. If they bend over a table in sitting, teach them to bend from the hips and not from the middle of the back. In the end this proper position will give them much less fatigue. Do not restrict their variety of movement under false theories of propriety.

The superstition about women's relative weakness begins to show itself in the training of children. Girls are frequently guarded against exercise that they need as greatly as boys, and at every critical period of their life thereafter they pay in suffering for the misguided consideration of those who had their training in hand. The so-called "lady-like" demeanor of girls is a thing to excite impatience. Girls brought up in strait-jackets of physical propriety—physical freedom will hurt nobody's "manners"—can never have the grace of deportment, the variety of poise, the readiness

in emergency that will belong to girls of liberal physical training.

As I have said, children need very little studied exercise aside from the breathing, and nothing artificial is a substitute for outdoor sport. Nothing makes better lungs than running and climbing. Excessive running is as injurious as any other excess. But frequent and easy running is one of the finest of exercises. The opening of school yards for games will help to improve the health of the present generation. But country children are less under the ban of either false ideas of decorum or of restricting surroundings. City children, who do not find fences to get over, do little climbing. If it were possible to give children climbing—and arm climbing as well as leg climbing—they would be tremendously benefited in the lung region and in their entire physique.

Children are particularly in need of diverse exercise. They should not be allowed to acquire hobbies, that keep them in one line of exercise to the exclusion of other useful movements. The natural tendency of the body is to distribute strength, but habits

and surroundings are continually interfering with this symmetrical growth. If children are made to do moderate exercise at spading or shoveling or sweeping, the effect upon their back will be a reward for the efforts made by both trainer and trained. *Useful* exercise thus ranks above all others, because it means something and has a double influence.

It seems scarcely necessary to speak of the importance of proper clothing. Children that are so well dressed during play hours that they are constantly occupied in an effort not to bring home any marks of dirt are in a pitiable plight indeed. Children should have play suits as well as school suits and should be forced to change from one to the other at the proper hour. Neither girls nor boys should be compelled to think of clothes at all during play hours. Imagine boys of ten or twelve avoiding kneeling positions to prevent new trousers from bagging at the knees! As for the iniquity of putting corsets on growing girls, that crime has been too often condemned to require comment here.

In his new work on "Hygiene for Child-

hood," Dr. Francis H. Rankin says: "Housing children during the winter months, as a precaution against them taking cold, is a very great mistake. Very few colds are contracted in the open air if the feet, limbs and body are sufficiently protected, and if the children are permitted to follow out their own inclinations of running, skipping and having free motion of the arms, *and are not exposed for too long a time to the cold.* When, however, they are compelled to walk like 'little gentlemen and ladies,' even when bundled in furs, the body soon becomes chilled if the weather is very cold, and some disturbance of the system follows. Children should be accustomed to daily exercise in the open air in all weathers, unless, of course, it is very stormy or the cold is severe, and even when delicate they should not be deprived of the tonic effects of outdoor air, and of strengthening the muscles by exercise in it. The first effect of cold air on the system is a tonic, as may be seen by the bright color in the cheeks and a feeling of exhilaration after a walk on a crisp day in autumn. Prolonged exposure to cold, on the other hand, is very

depressing ; delicate children, therefore, should not remain too long out of doors if the weather is severe, or if it is very windy ; for high winds, if cool, rapidly abstract the animal heat, and are also depressing. If a child is chilled or cold, it should instantly be brought into the house to be warmed and sent out again—taking the fresh air and outdoor exercise in installments, as it were, instead of all at once. Never permit a child to remain out of doors when crying from a cold." The last admonition might at first seem almost superfluous, but is doubtless not as entirely so as at first appears Many indiscretions are committed on the theory of "hardening" children.

Those who have the care of children should endeavor to simply guide rather than restrict their exercise. They are certain to begin jumping sooner or later, and will certainly, until they have learned by experience, jump from points higher than they should. To avoid the chance of serious injury to the system teach little children to bend the knees and lean forward when jumping, that they may not seriously jar the spine. This may rank as precau-

tionary training. The best exercise for children is their natural gamboling. Studied sport has not half the value. Tumbling about brings all their muscles into play, produces a general glow in their bodies and wearies them evenly.

It should not be necessary at this day to emphasize the value of sleep to children, A child that is kept up an hour too late, and excited during that hour, will need a good deal of training to overcome the bad influence of the indiscretion. In fact, if children sleep properly, eat properly and breathe properly the rest of their training is scarcely worth talking of.

X.

SOME HINTS AND SUGGESTIONS.

IF, as we are so often assured, one man's food is another man's poison, it is undoubtedly true that a prescription of exercise for one man or woman may be less or more than another man or woman may require. It is utterly impossible to set down rules that might be applied to all people alike. We may count with a good deal of certainty upon particular characteristics in the human form and organization, and exercise is a medicine of such universal application that we may count definitely upon certain results from its adoption. But we cannot say when and for how long the reader of these lines shall follow the specific exercises. The average person, particularly if he or she leads a busy life, will probably find it an advantage to spend at least fifteen minutes over particular exercises

in the morning before fully dressing, and fifteen minutes again in the evening before retiring, with another period of special exercise in the afternoon if possible, and not too close to the evening meal hour. Of course light exercise is no detriment immediately before a meal, but if the exhilaration of practice should tempt rather vigorous movements prolonged for some time, the fatigue might not improve the appetite and would scarcely be beneficial in other respects. The entire series of movements outlined in the preceding chapters, if each is repeated ten, fifteen or twenty times, does not occupy very much time, and will leave the whole body in a pleasant glow, with no located fatigue. The constitutional difference between one person and another will render exercises much easier to one than another. Consequently it would be unwise to direct that any exercise should be practiced any more frequently than is rendered feasible by the muscular condition of the parts called into play.

I hope I have made it plain that the carriage and management of the body, between the

periods of specific exercise, is of more importance than the exercises themselves, and above all that proper breathing is the very cornerstone of physical strength. Our *habits* do more to form our bodies as well as our minds than the conscious efforts at improvement. So that if we can get in the habit of taking long breaths, and then gradually increase the length of our respiratory movement, and the volume of air thus taken in at a breath, we shall obviously do more than if we arranged to merely exercise the lungs at stated times. Stated exercises, however, have this value, that they give special movement to muscles and organs not commonly brought into play. Exercises, in other words, would be unnecessary to a person who lived a life of such physical activity that all the muscles and organs were certain to be called upon in the course of a day. Very few people actually fulfill this condition. There are professional acrobats who come very close to doing it. The postman is a pretty well exercised man, though his arms are lightly trained. Many mechanics have excellent exercises for the arms, legs and backs, but nothing to

strengthen the lungs and chest. The result is that they often yield to consumption in middle life while bearing many signs of muscular strength. It is for every person who wishes to train himself to determine his own deficiencies as growing out of constitutional defects or previous and present habits of life. Having ascertained these deficiencies, it is his duty to set about building up what remains unbuilt or tearing down defective elements. General health is often threatened by one imperfection in the system. It is customary to say that everybody has his weak spot. The difficulty is that most people have more than one. But it does not follow that these weak spots might not be banished by special effort.

"Why," I have heard it asked, "do doctors give so much medicine for complaints that might be remedied by natural means? Why do they not tell the patient how to cure himself, or, better still, to keep himself well?" The reason is, I believe, that most physicians weary of perpetual admonition. Their suggestions are not received until danger appears in actual

illness. A person who is fairly well smiles at the doctor's criticism. When he is on his back the doctor's word is law. The mystery of a prescription has some charm in it. Above all, doctors do not give patients directions for working out their own salvation without medicine, because they know that in an immense and hopeless majority of cases the patient will never take the trouble. They follow directions for a week and abandon their good resolutions. The doctor's practical and directly applicable remedy does not appeal to the imagination. There is no Latin in it.

The newspapers have recently contained some talk the purport of which was that some prominent elderly statesmen, bankers and business men kept marvelously good health without taking any more exercise than they could help. Some of these individuals may have kept very good health, but they have not done so *because* they have taken no exercise. They have kept well *in spite* of the fact, and observers should keep this in mind. But, notwithstanding the assertion, most of these mentioned are very

active men. Their activity may not take the form of hard riding or walking, but they are nevertheless active. The physiologists tell us that the reason a cat keeps slender in spite of her general outward inactivity is, that her muscular system is, in fact, constantly active. If she does not make many violent movements, she is almost constantly on the alert. The nervous activity of some people wastes without building up. With others the quiet activity produces much the same effect as outward activity. The actual explanation of good health with little apparent activity is probably a union of highly perfect organs and a fortunate habit of carrying and using the body, together with instinctively correct breathing. This habit, natural to some—and a very few—must be acquired by the majority like any other element of education. Peculiar natural gifts should not mislead the majority into carelessness.

From the theory advanced it will be clear that the general hints which I have scattered through these chapters are quite as important to the perfection of training under this system

as the specific instructions which I have given in connection with the exercise. In all candor it must be said that there is no substitute for *taking pains*. Bad habits are generally stronger than good habits, and control of the muscular system of the body will in many cases mean a lively struggle with long established habits. The will, which possesses so marvelous a control over the muscles, must be brought to bear upon injurious habits of walking, of standing, of sitting and of breathing. It must render those who would be strong and well persistent in their treatment of the difficulty. It must force the body, in the face of hurry-scurry or of lassitude, to yield itself to necessary special exercises.

Head-tired people and muscle-tired people are in two different classes. What is recreation for one is not recreation for the other. It is notorious that head-tired people are likely to shrink from the very exercise that they should seek. Head-weariness produces a tendency to avoid all initiatory movements. At the same time the shrinking of the head-tired person is, to

a certain extent, prompted by a necessary caution. The exercise taken up by a person who has been exercising the brain without the body should be exercise that animates the body without taxing the brain. It should be exercise of a kind requiring little fatiguing thought, though the changed attention has its value in relieving the brain. Exercise taken by a person who has been undergoing no serious tax on the brain system might profitably keep up a lively union between the intelligence and the muscles. Stimulus will help a *worried* mind, but when the mind has performed a great deal of detailed labor excitement of any kind is not a good thing. Sleep is much better.

It is to be hoped that no new system of training will ever send walking out of fashion. Walking is in every respect a beautiful exercise, especially when the walker walks as he should, breathing slowly through the nose. Running, as I have said, is an exercise of the highest value to the lungs. When I run for a few streets on a city thoroughfare, the populace look after me as if I were a "freak," or as if I

were making off with something not belonging to me. To excite notice and even suspicion is not encouraging to the average enthusiast. People living in a city are constantly under surveillance. They are not completely at liberty. Mind and body are under the restrictions imposed by the crowd. But men, yes, and women, *should* run. Occasionally they do run in great excitement, and in no proper way, to catch a street car or a ferry boat, and reach their seat breathless, heated and uncomfortable. This is not profitable running. If people kept themselves in trim for light running it would be no such disaster to hurry for the car.

People who complain at a little climbing should be reminded that the exercise, in any kind of moderation, is highly beneficial. Nothing could be better for the lungs. A recollection of this fact will actually make labor lighter for those who keep it in mind. The flight of steps leading to an elevated railroad station should afford only reasonable exercise to a person. Stair-climbing is, indeed, a livelier exercise than at first appears, and the fatigue it

brings upon people with weak legs and feeble lungs is not surprising. The weight carried in mounting an ordinary flight of steps is equal to a very considerable exertion of lifting. People who are not strong should thus not climb stairs too rashly, while they might make it an admirable means of building up their strength. In all such movements take the exercise without sudden or taxing motions. Step firmly and carry the chest free so that long, full breathing may buoy the body in its journey. Attention to the suggestions of this book will take a good many of the terrors out of stair climbing.

The shoulders should not be held back so far as to be brought out of line with the hip joints. To carry them as far back as possible, and at high tension, does not improve the force or beauty of the figure, though certain actors and military men seek to make themselves imposing in this way. The chest must be given prominence on its own account, and the shoulders, when held far enough back to give the chest free development, find a natural and comfortable centre.

Any tailor will confess that few if any of his customers have shoulders that are held precisely alike. The dressmaker tells the same story. Almost everybody has a low shoulder. This is the result of habits more or less complicated. Many people acquire a habit of contracting certain muscles when walking. One shoulder is held slightly higher than the other, the head is carried a little to one side, and one foot has slightly the advantage of the other in the labor of walking. Sometimes this trait is carried to grotesque extremes until a positive and palpable deformity is the outgrowth. In nervous people these habits are particularly frequent, and are observed in standing and sitting, and walking. In the growth of the body, in the waste and renewal of tissue, such habits are exaggerated by a steady development. Often they are the result of seemingly trifling habits like leaning to one side while sitting, or carrying a valise, or a book, or anything of the kind always in one hand. To counteract these tendencies cultivate the habit of alternating the use of the hands and arms. Watch for tendencies toward right or left-sided move-

ments in sitting. Endeavor to adopt a changed position, which will give a relief to the wearied muscles of the desk-worker. To correct a want of uniformity in the shoulders adopt this plan : Several times a day lift the low shoulder as high as possible, holding it there, for a few moments. A regular practice of this movement will slowly increase the height of the shoulder, and in a few weeks the shoulders will be found to come into harmony. A shoulder may be too high as well as too low, though this is less often the case, and the exercise in such a condition should be to draw down the high shoulder while the other is elevated, giving particular attention to the shoulder that most needs correction. The trouble with the high shoulder is probably a continued contraction of the muscles under a nervous habit. Relaxation is then all that need be sought. Endeavor (as I have previously urged,) to develop firm and self-reliant shoulders. There are many muscles in the upper back, shoulders and chest of which you have never discovered your ownership.

The simple *stretching* of the body is a great boon. How delightful to extend all the limbs and arch the back after long confinement! Stretching movements are very serviceable in preserving suppleness. A variation upon exercises already suggested might be a purely upward reach at a wall, first with one hand and then the other, and then with both, avoiding, of course, harsh straining in the first efforts.

Of course the best kind of exercise is the exercise the body receives in performing some useful service. If a person feels that he is getting some good out a certain kind of work he has more enjoyment in that work than if he considered it either harmful labor or labor that was merely obligatory. It is notorious that men will enter with enjoyment on active sport that makes a considerable demand upon their strength, when a hod of coal hurts their back, and a little spading in the garden fills them with aches for a week. As a matter of fact, too, work done without interest actually strains the body more than work enthusiastically performed. It might, therefore, be commended

that people cultivate the habit of themselves performing little physical tasks such as might ordinarily be relegated to servants or hired assistants of other kinds. A woman who sweeps and dusts, lifts and moves a little with reasonable caution, and makes a couple of beds of a morning, has taken exercise in a practical and valuable way. A man who does not hesitate to move a few office chairs with his own hands, who carries a few heavy ledgers, or lends a hand (without rashly overtaxing his strength) in moving a piece of merchandise, has done better than coddle himself all day, and afterward seek artistic measures of repair. In other words, exercise by rule need only supplement the natural exercise, which would be better if everybody could manage to get it. When once the body is *alive*, when all the muscles are healthy and control of the entire system is complete, a very little exercise, if it be continuous, is sufficient to keep a person healthy and strong. I am no believer in the theory of extensive destruction in tissues to secure health. This method seems to me to threaten the wearing out of the body before it

should wear out. It is abnormal. As has been suggested, the lower animals keep their strength for the most part with light exercise, and some of the very strongest with extremely little animation of moment. The tendency of hard exercise is hard muscles, and hard muscles are bad. The body should remain firm, but pliant and in most parts soft. It is in the conservation of energy, and not in prodigal dissipation of energy, that the greatest strength and endurance of the body will always lie.

Whenever I am asked what sort of gymnastics should be taken up by those who wish to carry exercise beyond the lighter or rudimentary forms outlined in my system of training I have always recommended tumbling, which is, after all, nearest to the natural gamboling of children and of animals, in what is vaguely called the "state of nature." The suggestion may seem rather startling to many. A back somersault appears like a very formidable feat to many quiet people. But it is not so hard as it looks, and there are scores of beneficial feats of the body that may be followed with no ap-

pliances and with great benefit to the general health.

The more vigorous gymnastics should be carried on under an instructor who may render the training symmetrical. The series of exercises outlined in this book will produce a very general development of the system, but there are exercises upon which the uninstructed may rashly enter without stopping to consider the chances of uneven development. It is a well-known principle that gymnastics produce as well as cure deformities. The deforming influence of fencing carried to excess must be offset by special training calculated to give the left side a harmonious relation to the right. Left hand fencing, well proportioned to the amount of fencing done with the right hand, is the best of all cures for the mis-balanced condition produced by ordinary practice. Boxing, if it is not turned into "slugging," is a fine exercise. It gives balance and suppleness to the whole body. Yet even boxing, if the same hand is always used for guarding, and the left shoulder is always lifted in the protection of the head, will

produce one-sidedness to a certain degree unless off-set by other exercise. To a certain extent boxing is an off-set to fencing, the left arm being here kept high, where the right arm is high in fencing. To a certain extent the left shoulder development in boxing is an off-set to the prominence of the right shoulder in many other exercises necessary and artificial. In rowing the shoulders receive even development. Few exercises are carried to greater excess than rowing. The work is very heavy, and is frequently carried to dangerous length. Rowing properly done, and accompanied by proper training in other respects, has a great capacity for shoulder and chest development, but it is an exercise that demands great discretion, and is at best liable, in itself, to give an uneven development. Wrestling, probably the most violent of all exercises, is injudicious for most people, unless they are in good condition, and in a competition that is fairly even.

A writer makes an interesting reference to trials of endurance. He says: "Exercise of endurance is characterized by the necessity for

perfect equilibrium between the intensity of muscular effort and the power of resistance of the system. Now there is nothing so variable as the power of resistance of each individual. So that which is for one man an exercise of strength, or of speed, becomes for another, stronger or better trained, a simple exercise of endurance. A canter is an exercise of speed for a cart horse, used only to walk; it is an exercise of endurance for a thoroughbred, which can sustain this pace all day without stopping. Rowing seems an exercise of strength to a man who is learning; after a quarter of an hour he is out of breath. For a waterman it is an exercise which he can, perhaps, keep up a whole day without any fatigue."

"Staying power" is directly related, yes, directly regulated by the strength of the lungs. There can be no endurance in a weak-lunged person, and strong lungs are thus the first and pre-eminent requisite in one who wishes to keep strong and be ready to enter to undertakings of any kind that tax the physical system. I may seem to reiterate a good deal

this necessity for lung development as a prime factor, but the necessity seems to exist, for few modern systems of training are giving anything like the necessary attention to direct lung training. They talk about big chests but little about big lungs. Men with fine looking chests often have treacherous lungs, a condition resulting from a cultivation of superficial strength. *The chest must be enlarged by the expansion of the lungs*, and not by muscular distension. A chest made full by muscular action is a chest traveling on false pretenses. It seems to mean fine lungs underneath but two often does not.

There is a point to be noted in connection with the kind of exercise suitable for persons of different constitution and different age. Young people of ordinary health, and no trouble with the heart, will enjoy and will profit by quick exercise—exercises of speed. But old people, or people suffering from debility or breathlessness, should cultivate that which slowly arouses their system and does not tax their systems. Running is good for all who can possibly accomplish it, but a long walk is much

better for a person debilitated by age, illness or excesses, and all exercises taken by such persons should be slow and firm rather than lively. Exercise for such persons should, in fact, be *persistent* rather than vigorous.

One year of good exercise will do more for a woman's beauty than all the lotions and pomades that were ever invented. Interesting as are the changes produced in a man by proper physical training, the change in a woman is more striking and significant. Exercise seems to have a particularly immediate effect on a woman's complexion. I have witnessed simply marvelous changes in the complexion, form and disposition of women under light training. I have in mind one well-built girl who carried herself poorly, breathed badly and had an unsatisfactory complexion. She joined a gymnasium, taking the lighter exercises, and began walking a good deal. In a few months a remarkable change had been produced. The unanimated pose had disappeared, the breathing was better (though still not what it should be, no special training having been directed to

to the lungs), and the complexion was so clear that one could scarcely credit the change. Under my own training I have watched most interesting changes as a result of breathing exercises alone, and the extent to which locally directed exercises have improved forms that were considered hopeless would not be believed save by observation.

People suffer a great deal from credulity in following this and that random prescription about air and exercise without stopping to study out the natural bearings of the case. In just the same manner as they take up violent and unnatural exercises in order to accomplish what much milder forms might give them, they take sudden and radical means of improving their diet and getting fresh air. Probably the feeling with regard to hard exercise is that it will get them strong in a hurry—a chance that precisely suits the American plan of existence. The suddenly rich American in the west, who bought a whole hotel just to get a sleeping place for one night, was the kind of man who might plank down a roll of bills and say to

some trainer, "See here, I want to be made a full-fledged athlete by to-morrow noon!" The thing can't be done, of course. In the same way people, who have been sleeping all their lives with their bedroom window tightly closed, hear of some remarkably healthy person who invariably opens the whole upper part of his window at night. They hear it explained that we must have absolutely pure air at night. So and so almost sticks his head out of the window when he sleeps and wakes up with icicles in his beard. Presto! the hearers pull down their windows half way, determined to get this remarkable exhilaration at once. They have not been breathing ice cold outer air all day, but it must be a good thing, for so and so is in such remarkable vigor! The result, of course, is a very bad cold in the head if not something worse. Nature refuses to tolerate such surprises. Again, the rough and tumble of a Russian bath to a person not in condition for the ordeal, may mean a whole season of neuralgia. A person with delicate ears should never take the cold plunge after steam without using cotton to prevent shock to

the delicate system of those organs. As for dieting, that is too long a story to take up here. It seems very easy to persuade people that every thing they eat is poison to their particular stomach, and the credulous suffer many a hungry pang in following out a scheme suggested by the last friend they spoke to on the subject. Everything but exercise is tried in the effort to cure a sluggish stomach. There are periodical efforts on the part of the human family to "get back to nature," as they call it. Getting back to nature seems to mean going to extremes. The hermit tries going barefoot and living on apples and barley. Animals have no artificial covering, and men frequently make spasmodic efforts to get rid of clothes. They get the influenza, but hold fast to the theory. The vegetarians, and water-curists, and all the other theorists—many of them with excellently founded ideas—too often get back to nature by quarreling with their own state. Few people try getting back to *our* nature instead of some abstract kind of animal nature. We are what we are, and every system of training must begin with us as we are before it can

make us anything better. My own plan attempts, at least, to build up the human system on the basis of what it already is, and, by making the best of what the system already is, instead of ignoring its limitations, to build up something more enduring.

A cheerful fact is, that nobody need consider himself unfit for training. I was born a weakling. Nobody thought I was really worth rearing. To-day I can lift three men, each weighing one hundred and fifty pounds, and trot with them for a hundred yards. If I had not been born a weakling my family would never have taken the trouble to make me, and I would never have taken the trouble to make myself, physically what I am. If Demosthenes had not been a stammerer he might never have made himself the greatest orator of Greece. If you are weak to-day let your resentment of the fact give you the mental strength to make yourself physically sound and strong. If you are what you are, it is scarcely an exaggeration to say that you can become what you wish to be.

The repugnance to exercise arising from mental fatigue, or long inaction, is something that must be carefully fought. What is often mistaken for physical fatigue is nothing of the kind, but rather an opposite effect, the numb pain of inactivity. It will frequently be found difficult in a person of confining pursuits to arise from this state and enter upon even simple bodily exercise. But the inclination to sink into lassitude must be stubbornly fought against. The weariness is of the head and only of the body by reflex action. Once aroused from this condition a person who starts his blood at a quicker pace feels greatly stimulated. The body becomes alive again, and all the functions of the body and mind give a sense of enjoyment. No magic ever worked more agreeable results than the quickened action of the blood. The body becomes warmer, and with increased warmth comes increased strength, courage and perception. The machinery of the brain turns out more ideas to the minute under a quick pulse than under a slow one. This relationship of a quickened circulation to the powers of the brain is, perhaps, frequently over-

looked. Writers can always take advantage of blood influence by introducing exercise when the brain force grows weak. In prolonged mental effort recesses filled with good general exercise, that starts the entire blood system, will always be a better method of alleviating the tension and tiding over the dangerous places than the use of any kind of liquid stimulant. When stimulants aid they aid by giving heat and artificial activity to the circulation. Exercise will supply heat in the safest manner and leave no drafts to make good on the bank account of strength. Stimulants are borrowed heat. Exercise is earned heat.

Some pertinent remarks on ventilation and clothing by that sagacious and wholesome writer, Dr. Felix L. Oswald, may be quoted here: "As houses have been called exterior garments, a heavy suit of clothes might be called a portable house—a protective barrier between the skin and the cold air; but in warm weather the most effectual device for diminishing the benefit of out-door exercise. Between May and October man has to wear clothes

enough to keep the flies and gnats from troubling him : a pair of linen trousers, a shirt and a light neckerchief—whatsoever is more than these is of evil. The best head-dress for summer is our natural hair ; the next best is a light straw hat, with a perforated crown. Hats and caps, as protection from the vicissitudes of the atmosphere, are a comparatively recent invention. The Syrians, Greeks, Romans, Normans and Visigoths wore helmets in war, but went uncovered in time of peace in the coldest and most stormy seasons ; the Gauls and Egyptians always went bare-headed, even in battle, and a hundred years after the conquest of Egypt by Cambyses (B. C. 525), the sands of Pelusium still covered the well-preserved skulls of the native warriors, while those of the turbaned Persians had crumbled to the jaw-bones. The Emperor Hadrian traveled bareheaded from the icy Alps to the borders of Mesopotamia ; the founders of several monastic orders interdicted all coverings for the head ; during the reign of Henry VIII. boys and young men generally went with the head bare, and to the preservation of this old Saxon custom Sir John Sinclair

ascribes the remarkable health of the orphans of the Queen's Hospital. The human skull is naturally better protected than that of any other warm-blooded animal, so that there seems little need of adding an artificial covering; and, as Dr. Adair observes, the most neglected children, street Arabs and young gypsies, are least liable to disease, chiefly because they are not guarded from the access of fresh air by too many garments. It is also well known that baldness is the effect of effeminate habits as often as of dissipation; and yet there are plenty who think it highly dangerous to let a boy go out bareheaded even in May or September. The trouble is, that so many of our latter-day health codes are framed by men who mistake the exigencies of their own decrepitude for the normal condition of mankind. Thousands of North American mothers get their hygiene oracles from the household notes of some orthodox weekly, where the Rev. Falstaff Tartuffe assures them—from personal experience—that raw apples are indigestible, and that rheumatism can be prevented only by night-caps and woolen undershirts."

The same wholesome writer expresses a sentiment with which I fully agree and cannot forbear to quote: "What a stimulous it would give to manly sports and manly virtues, nay, to the physical regeneration of the human race," says Dr. Oswald, speaking of the Turnbund and organized sports, "if we could make their yearly assembly a national festival! The river-meadows of Chattanooga, on the mountain amphitheatre near Huntsville, Alabama, would make a first-class Olympia, and our Indian summer would be a ready made 'weather-truce,' without an expensive burnt offering to the sun. Olives, it is true, do not flourish on our soil; our mercenary souls need other inducements; but the rent of reserved seats and camp tents would enable us to gild the crowns of the several victors. Imagine the athletes of every village training for the prizes —thousands of boy-topers turning gymnasts, ward delegates running for something besides office, and the Young Men's Christian Association seeking paradise on this side of the grave!"

Physical health must, indeed, become something more than a mere fad before our race can do itself justice in the eternal struggle for higher ideals. It is only pedantic cowardice that says we are physically going backward; but it is true wisdom to acknowledge the danger of allowing modern ignorance of the human body to long continue its dangerous effects.

APPENDIX.

XI.

A WORD ABOUT THE SPINE.

BEFORE saying anything of the spine as a feature of the human system to be trained or modified, let us see what the spine is from the anatomist's point of view.

If we go to a work like the "Anatomy" of Gray we shall find a satisfactory account of the spine from the historical and surgical sides; that is to say, an account of the spine as it has been and is in the average specimens of the human family taken for dissection, or examined with a view to gaining accurate knowledge of actual conditions. It is not the business of the anatomist to be a prophet. He is not concerned with the spine as it might be or should be. He is called to consider it as it is. I will not apologize here for giving briefly some information about so important a feature of the body as the spine. In fact, such

a course is absolutely essential if the suggestions to be offered concerning the training of the spine are to be understood.

The spine is described as a flexuous and flexible column, formed of a series of bones called vertebræ (*vertere*, to turn) Its average length is about two feet two or three inches. There are thirty-three of the vertebræ. They are divided by name into cervical, dorsal, lumbar, sacral and coccygeal vertebræ. As will be seen by the accompanying illustration, seven of these bones are found in the cervical or neck region ; twelve in the dorsal or upper back region ; five in the lumbar or lower back region ; five in the sacral or pelvic region, and four comprising the rudimentary tail of which evolution has not yet deprived mankind.

Speaking generally of the vertebræ Gray says : "The bodies of the vertebræ are piled one upon the other, forming a strong pillar for the support of the cranium and trunk, the arches forming a hollow cylinder behind for the protection of the spinal cord. The different vertebræ are connected together by means of the articular processes and the inter-

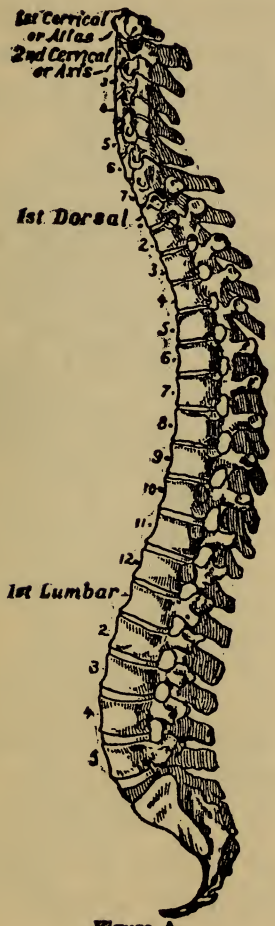

1st Cervical or Atlas
2nd Cervical or Axis
1st Dorsal
1st Lumbar

Figure A.

vertebral cartilage, while the transverse and spinous processes serve as levers for the attachment of muscles which move the different parts of the spine. Lastly, between each pair

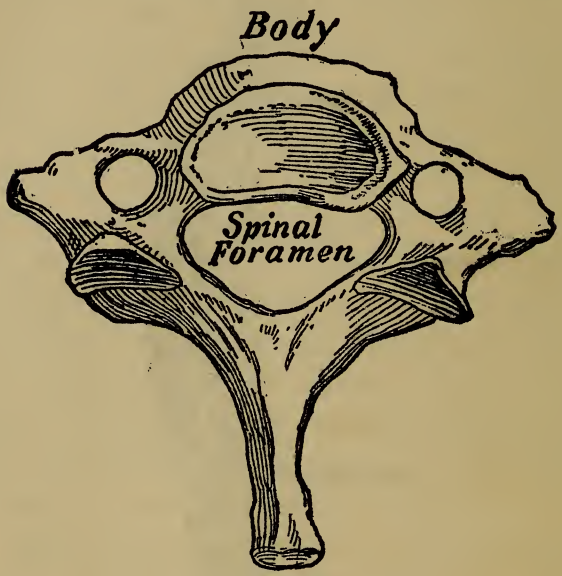


Figure B.

of vertebræ apertures exist through which the spinal nerves pass from the cord."

A fragment of vertebræ is really a complicated affair, as we may see in figure *B*, which presents a section (the seventh) of the cervical vertebræ. In figure *C* we have a group of the

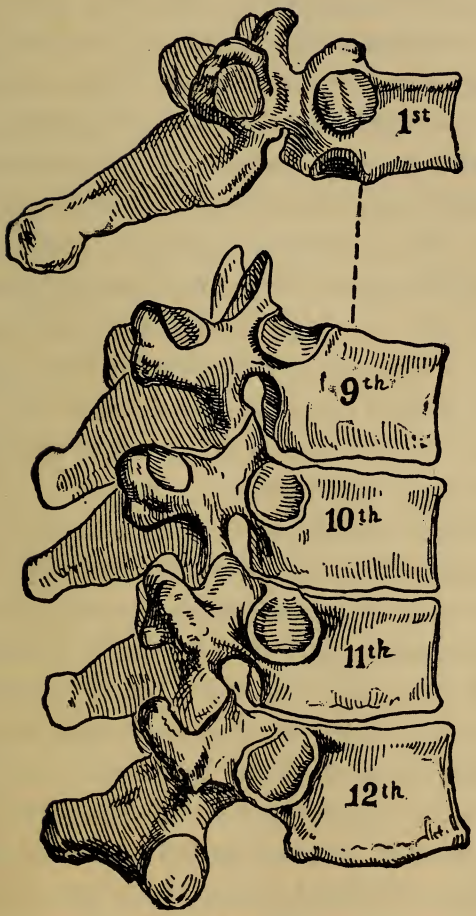


Figure C.

dorsal vertebræ. The illustration will suggest the peculiar manner in which the bones are fitted together. The parts in *C* bearing the numbers represent that part of the vertebræ which is called the *body*, and corresponds to the parts marked *body* in *B*. A cushion of cartilage is placed between each of these body bones. The opening in figure *B*, marked "Spinal Foramen," shows the avenue through which the carefully protected spinal cord passes. The protruding point of bone opposite the *body* is the point felt through the skin of the back and the point to which the muscle makes its attachment.

The curve in the spine, shown in Fig. *A*, is the one usually represented by anatomists, and is, perhaps, the curve actually existing in the average body. One of the general peculiarities of the spine is a slight lateral curvature toward the right, usually explained by the preferred use of the right hand and arm. The explanation is supported by the statement that in left-handed persons the lateral curvature is likely to be directed to the other side.

The curve shown in Fig. A is so general, I

might say universal, that it has come to be looked upon as inevitable. Finding this curvature so general anatomists have been ready to assume that the curve was favored by some desirability. The most familiar argument is that the curving of the spine helps to absorb vibration and saves the brain from shock. It is also urged that the curve lends greater force and strength to the spine than if it were straight.

Very young children do not have a curved spine. Their backs are perfectly flat. As they grow older and begin walking the spine begins to take on a more or less pronounced curve. If the body is carelessly carried the curve increases. In old age the curve is sometimes seen in its most pronounced form. Various causes contribute to the curvature. The muscles tend to draw the spine out of the straight line, which it readily assumes in young children. Then when the child stands the weight of its head and the upper part of the body aids the curvature, if there is no unnecessary yielding to the force of gravity. Relaxed muscles in a lazy, careless or decrepit person

leave the weight of these upper parts of the body to curve the spine in an exaggerated degree.

Let us look at the claim that the curved spine is desirable and inevitable. The suggestion that the curve aids the intervertebral substance in absorbing the shock is not borne out by an examination of the structure of the spine, or by a study of natural conditions in the individual. A shock from above, sufficiently severe to call into play the elasticity of the spine, would probably break the skull. A shock from below is so largely absorbed by the muscles of the legs and pelvic region that very little of it reaches the spine itself. If this were not so walking and running would be intolerable. If the spine were actually subjected to the necessity of bearing the frequent shocks from below a person would soon become paralyzed. In any case the relation of the curvature to the whole shock-bearing capacity of the spine is too slight to justify the preservation of the curvature on the utilitarian ground.

Prof. Gray himself admits that the cushion-substance between the vertebræ is thicker at

the front than at the back in the cervical and lumbar regions. In other words, it is thinner on the *inside* of these sharp curves of the neck and lower back, where the pressure is greatest, and thickest on the *outside* of the curves where it is slightest, as the illustration shows. In the middle of the spine, where the bones run in the straightest line, the cushions are of evener form, a fact which offers a curiously interesting argument for the general voluntary straightening of the spine.

The argument that a curve gives strength to the vertebral column is scarcely borne out by mechanical principles. A lateral arch is stronger than a straight horizontal line with the pressure from above. Thus, in Fig. *D*, an arch with a pressure at A is stronger than a horizontal support with a pressure at B. But

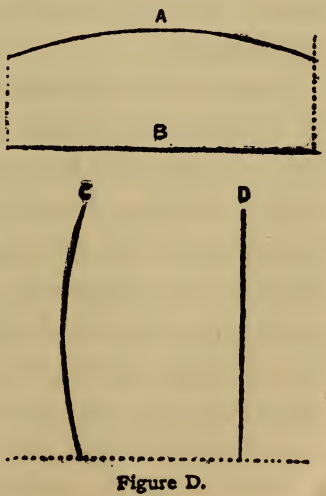


Figure D.

an upright curve, with the pressure at C, is not by any means so strong as the straight line with the pressure at D. This is a rudimentary principle of mechanics that cannot be escaped.

If neither the concussion theory nor the theory of force in support justifies the curved spine, and the curvature is explained only by the action of weight, of muscular action, and of careless carriage, then there is no reason why the curve should not be voluntarily modified, if the modification can be shown to be advantageous.

Some of the reasons why the spine should be straight, or should, at least, have as little curve as possible, have already been suggested in this treatise. It will appear that when it is straightened the general grace and force of the body is increased. The backward curve, as in Fig. 1 (p. 22), is enfeebling and forceless. The forward curve, as in Fig. 2 (p. 25), is dangerous as well as inelegant. This position naturally tips the pelvis forward. In a careless or feeble position the pelvis is sometimes too far forward—sometimes too far back.

Either position is inimical to the health of the organs and to the strength and endurance of the system as a whole. People who throw the pelvis too far forward in standing often tip it nervelessly back when sitting, with the result discussed on page 28.

The weight of the abdomen, which, in young children, begins to draw the pelvis forward, often produces the same effect in people who acquire abdominal fat. This action on the pelvis, increasing the forward curve of the lumbar region in the spine, is one of the most dangerous effects of corpulency. I would be at little difficulty in showing the shocking effects of this change in the various organs.

Thus a proper carriage of the pelvis is the first and paramount precaution against abdominal fat. The muscular action necessary to the preservation of a right angle in the pelvis discourages fatty formation in this region. As I have already said, no one who carries the pelvis in the manner described and illustrated, and who sufficiently controls the abdominal muscles, can acquire abdominal fat.

The proper angle in the pelvis is at once

a result of a straight spine and an assistance to a straight spine. Control of the abdominal muscles carries on the work the pelvis begins, and the neck muscles aid the spine itself in straightening the shoulder and neck region; while drawing back the head, with the face vertical and parallel with upright lines of the body, increases the force of the body's position and benefits the expansion of the lungs.

XII.

MORE ABOUT BREATHING.

SINCE the original publication of this book I have received from various persons who are interested as teachers in the science of physical culture, various suggestions and criticisms upon the method of breathing advocated in the foregoing pages. One lady who taught others how to breathe according to the method in which I had instructed her, was advised not to do so by another person who claimed to be high in authority as regards what form of physical education should or should not be taught in certain quarters, urging that the system I advocated was not orthodox, and giving as a further reason why my idea should not be advocated, that I was not a professional—whatever that may mean.

The whole difficulty in the question of proper methods of breathing seems to me to rest on the failure to understand the essential

difference between costal and abdominal breathing. A great deal that is conflicting and misleading has been written on this subject, both by those who are supposed to thoroughly understand the makeup of the human animal as well as by those who do not claim this exhaustive knowledge. It is not in my province, neither have I any desire, to criticise individuals. I have neither the time nor the inclination for personal debates, but so long as my own vitality survives I shall not hesitate to attack systems of training, be they general or specific, that have not a basis in actual facts and natural reason.

The subject of costal breathing, to which I have referred in the chapter on "How to Breathe," seems to offer one of the most pressing questions of the hour; and its discussion would be particularly valuable, perhaps, to those who fancy themselves securely orthodox.

But before saying more of this, I must speak of an allusion often made by people who seem to pay more attention to developing their memories than to developing their power of reason; I mean their allusion to the being called a

normal man and woman, by which is generally meant the primitive man and woman.

Now, this being who is held up for our guidance in physical matters as a sort of beacon which, if followed, will surely lead us poor civilized mortals into a state of serene health; who would make the *materia medica* obsolete and send into oblivion those who practice it; this being offers, I am afraid, no very promising guide to reasonable beings. Speaking of this primitive being whom we are told to look upon as a perfect physical type, Fritz Schultz in his work on "Fetichism" aptly remarks that he has no intelligence. Such beings exert themselves only so far as strict necessity requires. After the hunt comes unbroken repose. Feast and gluttony are regarded by all primitive savages as the acme of earthly felicity. Infanticide, fœticide, abortion, abandonment, sale and even eating of children are so common among them as to explode all the sentimental idyllic tirades that have ever been sung about the innocent life of the human animal in the state of nature. All of which goes to prove that education, especially that

part of education in which the reasoning faculties are devoloped by observation, comparison and deduction is much the best factor in developing men and women to the highest possible point of physical as well as mental perfection.

I do not beleive, then, in imitating the savage. From what I have observed of these so-called normal beings they are nothing more than what may be best described as raw material; and in that state they certainly are not models fit for us to follow, unless we wish to retrograde. In the undeveloped state of their intellectual powers, they know nothing of forces of nature, and unless they do they cannot hope to develope themselves physically. In their condition they know no more of breathing so as to foster a healthy and long life, than they do of ethical philosophy. They breathe abdominally because they are lazy and ignorant, and do not know how and never have known how to breathe any other way.

This very condition is the trouble with a majority of the people whom we call civilized. As I have already suggested, nature no more

teaches the human animal how to breathe, walk, stand, stoop and sit in a manner more beneficial than may be suggested by the promptings of our sensations, than she teaches to read and write. One is as much a matter of education as the other. Many writers are fond of pointing to the case of the Indian woman who gives birth to children without the aid of a physician or the care of a nurse, and of claiming this as proof of the Indian woman's physical superiority in a primitive condition. But in truth the fact offers no real proof of any such superiority, for the same conditions are frequently to be found in centers of civilized life among people whose circumstances force or induce them to do without the comforts of civilized people in general. Those who care to investigate, and who are willing to accept a truth even when it destroys a pet theory, will find that civilization causes no physical deterioration, either physical or mental, so long as people do not willfully reject knowledge.

Breathing costally, or without the action of the abdomen, is an educated method of breathing, and can be acquired only by an earnest

and conscientious effort and a definite co-operation of the mind and body.

In acquiring this method of breathing, the first thing to be done is to learn how to hold the body erect, after the manner already explained in Chapter II. Standing seems to be the simplest possible thing to do, but the slightest observation will teach the reader that all people do not stand the same way; that some round the shoulders, that some pull them awkwardly far back, that some protrude the abdomen, and so on. All of these postures are incorrect. There is only one right way, that is, the way that enhances the strength, the endurance, the general heath of the body. In Chapter II. I have sought to make plain what the correct standing position seems to me to be.

Now, practice dilating the nostrils as a horse does. Inhale slowly as much air as you can—through the nostrils, of course—and release the air again through the nostrils. At the same time slowly contract the muscles of the abdomen, contracting and releasing these muscles until the control is so perfect that the motion may be continued while the slow breath-

ing is going on. Meanwhile, the arms, unless they are occupied, should hang at the sides. Their muscles need not be used—they will not drop off.

To breath costally by a conscious effort of the nostrils and the muscles of the upper chest may require and does require a conscious restraint of a tendency to use the abdominal muscles. For the successful acquirement of this beneficial method of breathing the abdominal movement must be specifically resisted. The result is not only the strengthening of the lungs and chest, but the strengthening of the waist region.

I have elsewhere (in the chapter on training for women) alluded to the relationship between corsets and breathing. In that chapter I have said that the fact that corsets force women in a measure to breathe costally and prevent the abdominal action was in a measure a beneficial action. The suggestion seems to have been taken up by certain ladies eager to defend the use of the corset. At one meeting, indeed, a lady is reported as saying, "Checkley advocates corsets."

It should not be necessary to say that I never advocated or defended corsets. The fact that corsets may in one direction be said to have had a beneficial action by no means justifies their use. As measured against the injury they do, the benefit is very meagre indeed.

The chief injury wrought by the corset results from its use as a support to the body. Anything that helps hold up the body, that prevents the body from holding itself up, is—unless in the case of cripples or hopelessly enfeebled persons—an injury to the body. The corset increases any tendency to weakness in the back. It increases and does not diminish a tendency to fleshiness. Women who, in getting into a corset, push as much flesh as possible above and below the waist line in order to decrease their circumference at the waist, are not only deforming themselves and increasing the fatty enlargement by incasing and holding it free of muscular action, but are working other positive injuries to their system.

XIII

FORCE OF HABIT

IN the business world, the man who is habitually industrious usually wins the prize from the man who works by fits and starts.

Character is more valuable than ready cash as a business asset.

Few people realize that they can create a physical character for themselves.

They go through life with the idea that their bodies are fixed, inelastic entities and because they have had certain physical characteristics for thirty years, they must go on having the same physical assets or liabilities for the balance of their lives.

A man explains his unsightly round shoulders by saying that he has to bend over a desk for hours at a time. It has never occurred to him that by adopting a different sitting position, or

by altering the height or inclination of his desk top, he might have escaped his deformity—and if you tell him that he can straighten his shoulders by deliberately cultivating a different carriage of the head and body, he is apt to disbelieve you.

Conan Doyle through the mouth of Sherlock Holmes points out that manual trades leave their trade marks on the physique.

Everyone admits the physical effects of bad habits but overlooks the equally visible effects of good habits. It is habitual and not spasmodic exercise that counts.

A blacksmith's arms are proverbial, but the thickened, stiffened back of the coal heaver, the abnormal neck of the wrestler, the compact ankle of the toe-dancer, and the shin muscles of the "heel and toe" walker, are just as good instances of the permanent results of habitual work.

All of which is mentioned with the hope of making you realize the *permanent* beneficial results, both muscular and organic, that you can acquire by teaching yourself correct habits of standing and walking. Twenty years ago I taught a pupil how to walk and breathe. He was one of those "too busy to exercise" chaps and

though only 35 years old, had gone to seed to such an extent that while his chest was only 36 in. around, his waist measured 40 in. It sounds incredible, but after 4 months of correct standing, walking and breathing, he increased his chest to 40 in. and decreased his waist to 34 in. He did not take one special exercise and did not diet. In the course of his daily activities he walked about 3 miles a day—never more than a half mile at a time. Today at 55 years he is an even better built man than at 35 and his capacity for work is appalling to his associates.

I insist that by paying attention to your muscular habits, you can create a good physical character—that you can intentionally and deliberately make yourself a higher physical type. In other words that you can demonstrate evolution in one generation.

It is a human trait not to appreciate our possessions while we have them. An active youth in the game-playing age does not value his own flexibility because he has never been without it. Let him take up a confining business, and after 15 years of it try to play his old games. Then

he will find that because he has not used all his joints and muscles, some of them refuse to act as easily as they did when he was younger.

Five minutes exercise a day will keep a man flexible. I believe that when the muscles are kept in trim through *habit*, their owner should be able to jump in any game, after a long lay-off, and make a good showing—and there should be no after-stiffness. Practically every out-door game requires 3 things: good lungs, for endurance; good legs for activity, and absolute flexibility and smoothness of muscular action.

On Fixed Programs:

If you take special exercises avoid too rapid increases of the amount or vigor of movements. Don't do a special exercise 5 times one week, 10 times the next and so on ad infinitum. You will soon need an adding machine on that plan. Besides you are soon thinking of the count and nothing of the way you are exercising.

Again, you may have had a busy and exhausting day. Five minutes of relaxing exercise would probably be highly beneficial, but your program calls for so many repetitions that 50 minutes

won't see the end of them. Fifty minutes exercise under such conditions would be like forcing yourself to eat a heavy meal when you were not hungry.

Even worse is systematically increasing the severity of your exercise.

Avoid exercises that make the muscles stiff in action, and hard to the touch. Imagine trying to play tennis with your muscles consciously tensed. Tennis, in my opinion, needs more agility and more flexibility than any other game.

In golf, your professional will ding into your ears the necessity for "smoothness and rhythm" in your strokes.

In all vigorous athletics the prizes are won, not by those who have the most muscles, but by those who can control and *use* their muscles.

Strength is not to be despised, but remember that "quick strength" is what counts in games and in physical combat. Speed, backed with endurance, is the deciding factor. It is of little use to be able to stun a man with a blow of the fist, if you are so slow that you cannot maneuver yourself into a position to deliver the blow.

As you value your continued health and vigor, never enter on a program where you literally *force* the accumulation of external muscles by steadily increasing the resistance the muscles have to overcome.

Special exercises are necessary in cases of obesity or where particularly bad physical habits have literally distorted some parts of the bodily framework.

A wry neck is a distortion, so is a flat chest, or a flat foot, or a shoulder that is carried higher, or lower, than its mate.

I suppose I know as many special upbuilding and corrective exercises as do most trainers, but I am happy to say that such exercises are not necessary for the average person.

Breathe, walk, stand and sit correctly—master these accomplishments and long life and continued health will be your reward.

ON MODERN STYLES

Since I wrote in the nineties, protesting against the wearing of the kind of corsets then

in vogue, I have seen the change to the more sightly, but scarcely less harmful "straight front corset," to the almost rational girdle, and of late to no corsets at all.

As a factor in improving the national health, I would consider the abolition of the corset an event of epochal importance, were it not for the fact that those who abandon the corset are the very ones who indulge in the grotesque and ungainly "flapper" pose. Surely those young women who affect this round-shouldered, stomach protruding, hip undulating pose have achieved the acme of physical sloppiness.

The present limitation of clothing I heartily approve. Men who, a generation ago, would have at the advent of cold weather been forced into thick and stuffy under and outer clothing, now wear winter clothes much the same weight as their summer clothes and put on extra wraps only when the emergency demands it.

Women are freeing themselves from the shackles of dress. The almost Olympian demand for outdoor athletics is partly responsible. In 1920 there must have been 50 first class women swimmers, tennis players, golf players and riders

to every one in 1900. Women now take part in almost all games and their average performance is not very much below that of men.

I have seen four young women tearing around a tennis court and making "gets" and strokes that would have astonished the best players of a generation ago.

If all women dress lightly, none will be conspicuous. A girl in a knee length skirt is not as much noticed as her mother was in a so-called "hygienic" ankle-length skirt.

Ages ago women adopted the corset in an effort to have a certain conventionally beautiful figure, and in the time since, the wearing of corsets has become a convention, and one from which only women can rid women.

Even when slenderness is the mode, no woman wants to be painfully thin.

Regardless of all modes, every woman dreads passing beyond the point of plumpness. In individual cases where heredity is a factor, or organic or glandular disturbances are present, extreme thinness, or fleshiness MAY be incurable. In 99 cases out of a hundred, however, rational dress, moderation in eating and exercise, together with

correct walking or standing, will give any woman an attractive, well rounded figure.

If one can ever make women understand that corsets keep a stout woman stout, and force a scrawny woman to remain scrawny, then dress reform will come with a rush.

Friends say to me "Checkley, what do you think of the automobile? You used to say that people did not walk enough, but what about it now?"

I cannot see that the present generation is a bit less physically vigorous than the preceding one. Young people, especially the leisured ones, do ride a lot in motor cars, but frequently they use the car to reach a place where they can exert themselves physically.

The immense growth of our suburbs is due to the auto and the trolleys. Golf and country clubs have increased ten-fold in two decades. If a group of young people drive to a Club and play a round of golf, or two or three sets of the very fast tennis that now prevails, certainly they are getting better exercise, and more varied exer-

cise, than if they strolled two or three miles after the fashion of their parents' youth.

And if the young women of the party dress so as to give themselves the greatest possible freedom of bodily movement, so much the better for their health.

When I commenced teaching there was but one game universally played—Baseball. Foot-Ball and Track Meets were a monopoly of a few eastern colleges and athletic clubs, and tennis was considered a somewhat effeminate diversion. I had this in mind when on page 151 I quoted Doctor Oswald's hopes.

Since then I have seen the spread of tennis, the introduction of golf and basket ball, and the raising of games like hockey into major sports.

Our country is big, but the American is adaptive, and whether he lives in cold New England or sunny California, he manages to play athletic games most of the year; consequently, we have today an army of millions who practice some form of sport with more or less regularity, and we have displaced the British in the athletic leadership of the world.

Your grandmother donned a cap and took up knitting at 45 and your grandfather's ambition at 50 was to wear a frock coat, and to be considered a pillar of conservatism. At the same ages your mother learns a new dance step, and your father commences to take golf seriously. Which proves that there is nothing like *continued* physical activity to keep one young.

This Greek Dancing, or nature dancing, is almost as good for the growing girl as tumbling is for the young boy.

Nothing can come nearer natural exercise than rhythmic dancing, where perfection of performance is dependent on freedom of movement, suppleness, balance and flexibility.

A man who stands, walks and breathes properly is almost always preeminent in games. The four greatest natural athletes I ever saw, all, consciously or unconsciously, stood, walked and breathed correctly. Each one was always absolutely erect and balanced. Each one had a straight back, powerful legs, deep chest, capacious

lungs and endless endurance. Not one of them ever went in for gymnastics and yet every one was supreme at games.

Speaking collectively, their outstanding physical characteristics were their ability to

1. Run much faster and further than most men;
2. Jump higher;
3. Throw a baseball and kick a football for a tremendous distance;
4. Stand so firmly on their feet that it was almost impossible to throw them to the ground in wrestling;
5. Push forward against the combined resistance of 3 or 4 ordinary men.

All these men are today over 50 years of age. All of them retain their figures and most of their youthful strength. Any one of them is physically a better specimen than 99 out of a hundred men at 25 years.

THE TEETH

It will pay you to clean your teeth religiously. Absolutely perfect health is impossible with defective teeth.

Employ the best dentist you can afford and

follow his advice as though your health depended on it, as indeed it does in a great measure.

An individual who keeps himself young by moderate exercise, will have sound teeth much longer than those who allow their organs and muscles to atrophy through lack of use.

All the bodily functions are interdependent. Modern dentistry through preserving the teeth, prolongs life.

Habitual moderate exercise, through natural means, keeps your body young and postpones the time of life when you must have recourse to the dentist's aid.

The *Condition of the Hair*—its thickness and lustre are, as a general rule, an indication of the vigor of the individual.

Some authorities claim that baldness runs in families and that a certain shaped head is liable to become prematurely bald.

I have little faith in local treatment as a remedy for baldness. I do not know that hair can be made to grow on a bald head, although I believe that if you can rejuvenate the body through exercise and proper carriage and breath-

ing, you will do much to promote a healthy growth on the scalp.

If you will take notes regarding the next 100 bald-headed men you see, I think you will find that the majority come in two classes:

Either they are stout beyond the range of plumpness, or else they are rather slender, and have thin necks and carry their heads thrust forward.

Many have written me asking "How is it possible for me to determine when I *am* holding my body correctly. Your charts are plain but how am I to be sure?"

Here is the answer—Stand with feet a few inches apart, arms hanging at sides—now make yourself as tall as you can, without straining. Reach up with your head (but don't stretch your neck like a rooster). Do this and you will feel your chest lift, while your shoulders, hips and feet will fall into proper alignment. If you hold your shoulders too far back it will prevent you from reaching your full height. So it will if you hold your hips too far back, or attempt to protrude your chest unduly.

Stand that way a little while—you will find that unconsciously your weight has been shifted to the balls of your feet, the heels are resting lightly on the ground, your upper chest wall is moving with unwonted flexibility and there is a slight tensing of the muscles along the lower part of the spine. (It won't need many attempts—you will soon gauge your position by the way you feel—the position exhilarates you.)

Now, relax into your former position and you will immediately realize that like most people you have been habitually supporting yourself on your bones, rather than with your muscles.

In walking simply hold your head high. Don't lean back; don't push out your chest; don't hold neck, shoulders or arms rigid. Everything easy. Holding the crown of your head high will lift your chest. It is not necessary to tilt the head backward.

When practicing "costal breathing" always make yourself tall, but do not fall into the error of thinking that *extra exertion* will bring extra results.

Some are apt to figure that if they can do

well by making themselves tall, they will do even better by straining themselves and stretching up to the limit. That would only put one under such a strain that less, rather than more results would be obtained. On the other hand, it is impossible to acquire the "costal breathing" if the body is held in a slouching position.

Do you suppose that soldiers are made to stand erect simply to make a pretty picture on parade? Or do you realize that leaders of infantry long ago discovered that men who are drilled into holding themselves erect, will march further, carry more equipment and better endure the fatigue of a campaign than if not so trained.

Take trainers of prize fighters. Their job is to bring their charges to the summit of condition at a certain date. Besides sparring and ringcraft, the fighter must enter the ring at the very top pitch of speed, endurance and vitality. You never hear of a prize fighter in training handling big weights, or doing heavy gymnastics to put big hard muscles on the arms and upper body. The conditioning is mostly rope-skipping and road-work; leg and lung exercises to promote endur-

ance and vitality. Of course such training entails work for the waist muscles. Every time you raise your knee the abdominal muscles contract and every time your foot spurns the earth again, your lower back muscles are busy.

Prize fighters are selected physical specimens. I do not recommend running as a curative exercise except for the comparatively young. The majority of men past the meridian of life can get all the leg work they need from vigorous walking.

It seems to me that many authorities, while realizing the destructive influence of bad bodily habits, fail to emphasize the constructive value of good habits. We are told that a round-shouldered position cramps the chest and interferes with the free play of the lungs, and are then told to "hold the shoulders back," apparently merely to avoid an evil condition. Why not go further, and show how a correct carriage, combined with a specified method of breathing, will not only keep you from cramping the lung-space but will actually make the rib-box larger?

If we are told to hold ourselves erect, the

emphasis is laid more on the effect on the beholder than on the beneficial health-giving effects to ourselves.

We are all more or less creatures of habit, and these habits mold not only our minds and our characters, but our bodies as well. The effect of the four years' constant drill at West Point is still visible in the erect carriage of many a retired Army officer. The effects of life-long peering in books is evident in the round shoulders and wry neck of many an elderly scholar. *Habitual* employment at a sewing machine warps the frame of most operators. *Habitual* mountain climbing gives highlanders strong legs. *Habitual* work on the flying rings and trapeze gives the circus performer an odd, top-heavy development. *Habitual* use of the right arm makes the right shoulder stronger than its mate. Such instances are familiar to all. What escapes our notice is the effect of slight differences in the gait and bodily carriage. A man who takes a long step, and always has the knee slightly bent, not only visibly shambles but also has slender, shapeless legs. The man who walks with a short stride and a quick firm step, usually has pro-

nounced development of certain muscles in the leg. Moreover, we can state, almost as an axiom, that a man with a firm walk has a firm character, and that physical slouching is frequently accompanied with mental and moral indecision.

Individual characteristics of bearing are often transmitted from one generation to another. I have seen sons who resembled their fathers in face, figure and *manner of walking*. But if a man has inherited a certain bodily conformation and tricks of gait and gesture, it does not mean that he cannot improve his body until he is of a finer physical type than his father. A tailor's oldest son may become a journeyman in his father's shop, and his body will be molded by his daily work; while a younger son will become a farm-hand and acquire a much more rugged type of body.

It is very much easier to drift into a bad habit than to cultivate a good one. But in body-building (or body *molding*) the rewards of correct habits of posture and breathing are so great that, if such effects are intelligently explained, most people will immediately strive to cultivate the required habits.

Among those who take up a definite program of gymnastics more than fifty per cent quit immediately, on account of the muscular stiffness consequent on the first day's exercise.

When forming muscular *habits* there is no such deterrent. The adoption of the correct standing and walking positions will not produce any soreness of muscles nor stiffness of joints. The only noticeable result is a sense of exhilaration and of increased vigor. And that makes you eager to continue the experiment.

Even the first definite practice in the effect to acquire costal breathing is not accompanied by any soreness in the respiratory muscles. It takes several days before any real flexibility is apparent in the upper ribs and consequently there is no disturbing strain on the muscles involved.

The *habit* of carrying the head high has a most noticeable effect on the size and contour of the neck. If you increase your chest girth three inches (which is quite possible) by adopting the suggestions in chapters II and III, you will find that your neck has increased three-quarters of an inch to an inch, and has become distinctly more smooth and rounded. The appearance of

the neck is a visible gauge of your physical condition and measure of vigor.

The *habit* of a measured elastic stride, of stepping out firmly and vigorously, will add more than an inch to the girth of the calf and more than that to the size of the thigh.

A very large number of men have the failing of striding from the knees instead of from the hips. As one abandons games that require running, the hip muscles and those of the upper thigh are apt to be used less and less. Most business men will admit that their shoulders are so stiff that they cannot throw a ball for any distance and yet do not realize that their hips are even more stiff through lack of proper use.

Stout men blame their "corporations" for their inability to lift their knees, whereas the stiffness of the hip-joints has a lot to do with it.

A woman, providing she wears a comfortably loose skirt, bends her leg less at the knee, and walks from the hip, much more than man does.

I once caused a good deal of discussion by recommending that, in walking, a man should undulate the hips. That is, he should, when

advancing the right foot, reach forward with the right hip, and vice versa.

My critics claimed that this would produce an unsightly swaying of the hips from side to side. They did not understand that the hip-movement is forward and backward in *line* with the stride, and that, when in ordinary street attire, this motion is not noticeable. This alternate reaching forward with the hips adds an inch or so to the length of every stride without increasing the exertion of walking.

More important still, the habit of thus walking will keep the hip-joints flexible, develop the muscles of the hip region and add to the strength of the loins.

A person with a slow, languid walk will generally sway from side to side, rocking as they walk. Such a gait indicates a weakness in the muscles of the sides, which will quickly be eliminated if a vigorous stride is adopted as a habit.

XIV

ON RETAINING YOUTH

CAN a man by definite intention keep himself young?

Is the duration of an individual's life entirely dependent on hereditary vigor, or, can we by governing our physical habits become more vigorous than our forebears?

Does the continuance of the proper functioning of our internal organs depend entirely on chance? Or can we preserve such organs in their youthful vigor by a definite program of exercise?

Old age is a physical decay. Eliminating death from epidemic diseases, most people die from the debilitating, or improper functioning of some one of the vital organs or glands.

Men of fine build and in apparently vigorous health drop dead of heart disease. Such cases are hardly unusual enough to cause comment. Men who suffer from diseases of the liver, lungs,

kidneys or from glandular troubles usually bear outward marks of those diseases.

Certainly it is axiomatic that individuals addicted to excess (whether such excesses are in the line of intoxicants, drugs, overeating, sexual indulgences, or muscular exertion) are apt to die when they should be in their prime. And conversely, that those who exercise moderation in living are apt to last a long while.

What are the indications of youthful vigor? An erect carriage of the body, a head held high, a vigorous stride, a flat back and flexibility of joints and muscles.

The signs of age? A drooping head, bent back, feeble step and stiffness of joints and muscles.

Most men of sedentary occupation unquestionably rust out. And this process of rusting out is simply due to lack of exercise—lack of use of the muscles and joints. Sensible men recognize this and act accordingly. Now-a-days you frequently hear an elderly man say that he is "keeping himself young" by playing golf, or by light work in the garden.

Golf and gardening have unquestionably been

the physical salvation of many a man. I think the combination of the two beat the most elaborately equipped gymnasium. The only trouble is that ninety per cent of us have neither gardens or golf clubs, and the remaining ten per cent play or dig, only a few months in each year.

My point is, that all of us, men *and* women, can keep ourselves young by merely "watching our step." That is by walking, and standing, in such a way that we convert a disagreeable but necessary exertion into a pleasurable and beneficial exercise.

Since first writing my book I have been able to check up, in hundreds of cases, the effect of my theories and teachings.

I can truthfully say that I have taken men in their forties, thin-necked, flat-chested, stoop-shouldered, spindle-shanked chaps, and by instilling an enthusiasm for correct walking, changed them in a few months into deep-chested, flat-backed, round-necked men with well knit legs, and a stride that denoted their inward vigor.

What did it cost them? Nothing but a little will power and watchfulness for the first few weeks,—for during that period they had to pur-

posely make themselves walk and breathe correctly. After a month or so it became a habit.

If a vigorous, springy step, flat back and a head held high are signs of youth, we can prolong youthful vigor by forming the habit of so carrying ourselves.

You may say "That is simply counterfeiting youth"—I deny it, and say emphatically that it is easier, far easier, to keep oneself young by correct method of walking and breathing, than it is by playing golf.

I have already said that the organs could not properly function when the habitual position of the body was markedly improper. Anatomy and physiology are now compulsory subjects in our public schools, and no child is allowed to forget that a man who stoops and holds his chest flat, is not as apt to have as much lung power as a man who stands erect and holds his chest out. All of you know that. But how many of you realize that the proper functioning of the organs *in the abdominal cavity* is largely dependent on the proper position of the body, and the condition of the muscles of the waist region?

The owner of a torpid liver is generally a lazy individual. I know stout men who can harden their arm muscles because they are proud of their biceps, and keep mental control of that muscle. But they cannot harden the muscles that lie over the stomach (rectus abdominus). If they could, they wouldn't be paunchy. It only takes a little thought and practically no special exercise to keep your waist down, *if* you carry yourself correctly.

I am not foolish enough to claim that organic diseases can always be cured either by exercise, posture or diet; but I do devoutly believe that one can ward off such diseases by taking muscular exercise that helps the organs to function.

For generations, physicians have prescribed horse-back riding as a curative for certain liver troubles. Riding is a fine exercise, but if you "have a liver" and can't afford a horse, why not try a little rope-skipping? It will shake up your liver, and develop your legs and lungs at the same time.

Leading physicians tell me that the higher they go in their profession, the more they search for and try to eliminate the underlying causes

of organic disease; and that the correction of such causes involves the co-operation of the patient, generally in the line of submitting to some fixed regimen of exercise, diet, or abstention from indulgences.

Doctors today prescribe mountain-climbing to build up weak hearts; open-air life for lung trouble, exercise for stomachic and intestinal disorders. And if you have an organic disease, the modern physician will often tell you that medicine (drugs) is merely an alleviation, and that the cure lies in your ability to change some detail in your mode of living. And to the eternal credit of the profession, be it said that practically every doctor will show you the method to correct your own trouble, even if he makes you so healthy that he loses you as a patient. A physician who fails to advise you to take *moderate* exercise is just as rare as the dentist who tells you that you need not clean your teeth.

People have such odd ideas about abdominal fat. They seem to think that a big paunch is all external fat; that is fat interlarding and overlying the abdominal muscles. Such external fat is al-

most invariably accompanied by internal fat—fatty tissue that surrounds and clogs up the organs, that interferes with the free travel of the diaphragm and which may eventually invade and degenerate some of the organs themselves.

And anything that deteriorates one organ shortens life. The internal economy is so wonderful that the heart, for instance, may take up part of the work of an inert liver or kidney, but that throws an undue strain on the heart which in turn affects it.

Abdominal fat is caused just as much by faulty carriage as by overfeeding and lack of exercise. A man who holds his shoulders too far back and protrudes his abdomen, will almost surely accumulate a paunch. The bigger the paunch becomes, the farther he has to lean back to balance it, so that the paunch continually augments.

A man with a moderate corporation can reduce it in a few weeks by correct walking, and the few special exercises for abdominal muscles given in Chapter VII. Thereafter, correct standing and walking will keep him from accumulating fat in the waist region.

When the trunk is held naturally every organ is in proper place and is unimpeded in its functions.

Further than that, you cannot carry the trunk properly without developing the muscles of the lower back; and when these muscles are well developed, they have an incredible effect in promoting the activity and continued health of certain glands which have a controlling influence over a man's *vitality* and *vigor*.

This one effect alone would make the correct posture worth while.

Have you noticed how often people speak of a great or successful man as being "erect and vigorous, at the age of 70." The "erectness" has a great deal to do with the vigor and the success.

The few weeks spent in creating the habit of holding the body properly erect will pay dividends in the way of increased years and vigor.

So, my advice is: Even if you are old, persistently walk and stand like a young man, and you will be surprised how soon you will approximate the figure and, in a measure, the vitality of your own youth.

SOME MEDICAL AND PERSONAL COMMENTS ON THE CHECKLEY SYSTEM AND "A NATURAL METHOD OF PHYSICAL TRAINING"

Original Theories

Dr. Jos. Rodes Buchanan in the Anthropologist

His methods and discoveries differ so widely from everything that has been done in that direction heretofore, and are indeed so marvelous, as to suggest that something more than the common reasoning power of man may have guided him as by intuition to doctrines so novel, of which there has never been a hint in any production of physicians, artists, hygienists or philosophers heretofore.

A Natural and Reasonable System

Science

The method of training advocated and taught in this little volume appeals at once to the good sense of the reader. It requires no machinery or apparatus of any kind, except, of course, the bones and muscles of the person training, and it may be taken up and pursued at any time and in any place, either with or without an instructor. The aim is not to produce champion rowers or boxers or sprinters, nor even to develop good "all-round" athletes, but to do for the body what education does for the mind. The aim is to put the body into the best possible condition for doing the work it has to do, and to keep it in that condition. The author believes that there is more "straining" than "training" in some

of the popular systems of physical training practiced in and out of the college gymnasium, and his method departs radically from those systems in many respects. But we find nothing in it that physicians could take exception to in the case of any person physically sound. The book is fully illustrated, many of the engravings being made from instantaneous photographs of the author in the different positions assumed in the course of training.

A Natural System

New York Medical Times

A young man educated as an engineer, and accustomed to study in his profession the harmony of parts, applies the principles thus obtained to the careful study of the most perfect machine in the world, the human body, and finds, he thinks, a solution of the question which the scientist and philosopher in the past had so long in vain tried to solve. The essence of Mr. Checkley's system is that the ordinary movements of everyday life, breathing, walking, stooping, etc., can be made to develop the body so perfectly in the routine course of everyday action, not only sufficient to prevent any unnatural and unhuman increase of size, but also to bring the body up to a full natural development, with all that vigor and beauty of motion characterized by the harmonious action of all the organs. In truth, there can be no proper training that does not educate the whole system of the man. Mr. Checkley's ideas are particularly applicable to women, not only in her movements, but especially in her dress, which, he claims, if properly carried out, will not only give a perfect form, but do away with a large portion of those pelvic diseases to relieve which a very large class of specialists are acquiring not only professional reputation but wealth.

The system of Mr. Checkley promises, by the proper control of all the organs, much better results than can be obtained by the exclusion of different kinds of food. The system in its healthy condition, with each muscle and bone and tissue doing its proper work, takes up only the necessary ingredients from the food to accomplish its purpose, getting rid of the rest in the form of excrementitious material.

Safest, Wisest, Most Practical Method

From Annals of Hygiene

We are always heartily in sympathy with any system of physical culture that aims to accomplish results without the use of apparatus. Of course, *all* appliances are not to be condemned, but we, quite firmly, hold that they are unnecessary. A little volume of "Physical Training," by Edwin Checkley, has recently fallen into our hands, and we have been so very favorably impressed with its teachings that we can and do strongly commend its perusal to all the readers of *The Annals*. It is a very happy thought of Mr. Checkley's, and pre-eminently correct, when he holds that "a man or woman should get good health and sufficient strength and perfection of form in the ordinary activities of life, if those activities, however meagre, are carried on in obedience to right laws." Mr. Checkley's instructions about "breathing" are particularly good. While we are not entirely in accord with the author's commendation of running, which we do not think a healthy or desirable form of exercise, with this one exception we can heartily recommend his book as containing about the safest, wisest, most physiological and most practical exposition of the subject of physical culture that we have yet encountered.

Not for Athletics but for Health

Medical Review

This is just what it is claimed to be, a natural method of physical training. It is written by a man who knows his business. It is written in a pleasing style, and is so written that "one who runs may read."

Well Worthy of Study

New York Medical Times

Mr. Checkley's investigations have certainly a scientific basis, and are well worthy of that careful inquiry and experiment which every physician can carry out himself. Bismarck and others keep down the flesh by a careful attention to diet, but the same plan pursued by others is a complete failure. A careful study of the use of every organ and the proper carriage of the body, so that each organ performs its proper function and all work in harmony, it would seem, might be a much more scientific and pleasant solution of the question than the mere study of the nature and character of foods.

Will Draw Everybody's Attention

Prof. Persifor Frazer, D. S., in Journal of the Franklin Institute

The writer of this small octavo of 224 pages comes before the public like Francis Galton, without any title from the school of Medicine, and, like Francis Galton, he displays a familiarity with the structure and functions of the body which adds very much to the charm and the convincing force of his book. He has many points which favor him before the public, such as an earnest and withal a very clear and pleasant style; a subject which interests everybody and will draw everybody's attention so soon as the writer inspires confi-

dence in his knowledge of the subject, which Mr. Checkley very shortly does. Then the means which he employs are simple and natural, and being always at hand, leave the would-be physical reformer no excuse for missing his exercise. The theory put forth by Mr. Checkley is not new but it is very strongly stated. It is, in short, that with the attention called to such points as the correct carriage of the body, the proper manner of breathing, and the repetition, morning and evening, for twenty minutes or so, of such motions as bring into play the muscles on which the daily routine makes no demand, not only the general health and power of sleep are improved, but also the physical strength is greatly increased, the tendency to corpulence checked, and its unpleasant consequences avoided.

Even were there no examples of the practical success of this system its simplicity and reasonableness would take one captive, but the writer has seen a practicable proof of its beneficent working on a short and very fleshy man, whose pursuits were so little favorable to the maintenance of the well-proportioned frame, and whose occupations were so exacting and numerous that he had fallen into that bourne of rotundity and flaccid muscles from which few can return. For years he had seriously projected correcting this evil by gymnasium exercise, but had never "found the time," and was rapidly tending toward the outline of a human sphere. Finally, this little book fell into his hands, and he made a determined effort to follow its precepts.

Without subjecting himself to any unusual deprivation of diet, he began rapidly to reduce his excessive corpulence, until in three weeks his trunk had changed from the appearance of a pear to that of a barrel, his waist measure had diminished from forty-one inches to thirty-six and one-half, while his chest measure had

increased. A neck began to be visible; short breath became a nightmare of the past, and almost without effort he assumes the proportions of an athlete.

It may well be that all will not have the strength of will to carry out this regimen so faithfully, and will not so soon reap their reward; but that it will prove beneficial to all is certain. The advice it contains as to the physical training of women and children is timely and admirable.

The writer is not acquainted with any treatise on the art of preserving health and comfort, or of regaining them when lost, by natural and inexpensive means, which is so sensible, so practical and so clear as this little book, which is heartily recommended to the public.

Will Bear Good Fruit

William Blaikie, Author of "How to Get Strong"

So easy to learn, and so quick in bearing results of a kind gratifying and helpful to the pupil, that you cannot fail to soon have an army of followers. If the habit of deep, slow breathing which you urge can only become general it will add many per cent. to our vitality and staying powers as a nation; while the correct carriage of the body, as taught by you, will be a boon especially to young women who wish to be graceful which can hardly be overestimated.

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